

501. ✓  
INDEX TO VOLUME 75, 1970

# Journal of Geophysical Research

U. of ILL. LIBRARY  
MAY 25 1971  
CHICAGO CIRCLE

PUBLISHED BY

THE AMERICAN GEOPHYSICAL UNION



# SUBJECT INDEX

Journal of Geophysical Research, Volume 75

## Notes

- [l] designates letters
- [br] designates brief reports
- [d] designates discussion of a previous paper
- [r] designates reply to a discussion
- [c] designates correction

## Absolute age, dates

### Lava

- Africa, Mauritania, Tenoumer crater  
(French, Bevan M., *et al.*) 23 4396

### Meteorites

- Enstatite chondrites  
(Gopalan, K., *et al.*) 17 3457
- Sr/Rb, carbonaceous chondrites  
(Kaushal, Sushil K., *et al.*) 2 463

### Sedimentary rocks

- Florida, Brevard county, Cape Kennedy  
(Osmond, J. K., *et al.*) 2 469

### Tektites

- Australia  
(Gill, Edmund D.) 5 996
- Australia, [c]  
(Gill, Edmund D.) 32 6729

## Absolute age, methods

### Aluminum-magnesium

- Meteorites  
(Clarke, W. B., *et al.*) 2 448

## Aeronomy

### Absorption and scattering

- CO<sub>2</sub> atmosphere, photolysis, experimental studies [l]  
(Felder, W., *et al.*) 34 7311
- Coefficient, CO<sub>2</sub>, ultraviolet [l]  
(Heimerl, J.) 28 5574
- Cosmic rays, lower atmosphere  
(George, Michael J.) 19 3693
- Cosmic rays, lower atmosphere [l]  
(O'Brien, K.) 22 4357
- D-region, [l]  
(Ganguly, S.) 28 5626
- Electron density profiles, D-region differential phase  
(von Biel, H. A., *et al.*) 25 4863
- ELF waves, terrestrial  
(Galejs, Janis.) 13 2529
- F-region, heating, mechanism, radio waves, penetration frequency  
(Thomson, J. Alex.) 31 6446
- F-region, heating, radio waves  
(Meltz, G., *et al.*) 31 6406
- F-region, HF waves, Boulder, Colorado  
(Utlaut, W. F.) 31 6402

### F-region, radio reflectivity

- (Cohen, Robert, *et al.*) 31 6439

### Hydrogen Lyman $\alpha$ emissions, hydrogen atmosphere

- (Jones, R. A.) 34 6966

### Hydrogen, solar Lyman $\alpha$

- (Meier, R. R., *et al.*) 34 6969

### Stratosphere, aerosols, turbidity

- (Volz, F. E.) 9 1641

### Stratosphere, aerosols, turbidity [c]

- (Volz, F. E.) 27 5296

### Thomson scattering, photoelectrons, conjugate phenomena

- (Evans, J. V., *et al.*) 4 807

### Turbidity, aerosols, stratosphere, Agung volcano

- (Volz, Frederic E.) 27 5185

### Whistlers, VLF signals

- (Scarabucci, R. R.) 1 69

## Composition

### Alkali metals, airglow

- (Allen, E. R.) 15 2947

### F-region, topside sounder profiles [l]

- (Mayr, H. G., *et al.*) 13 2608

### Hydrogen, beyond 5R<sub>E</sub>

- (Mange, P., *et al.*) 10 1837

### Hydrogen, D-region [l]

- (Burke, Rudolf R.) 7 1345

### Hydrogen, H Lyman $\alpha$ , absorption

- (Jones, R. A., *et al.*) 10 1849

### Hydrogen, oxygen, helium, ions, topside

- ionosphere, OGO 4

- (Chandra, S., *et al.*) 19 3867

### Hydrogen, production rate, airglow, solar minimum

- (Meier, R. R., *et al.*) 22 4224

### Ionosphere, D-region O<sub>2</sub>(<sup>1</sup> $\Delta_g$ ), photoionization [br]

- (Clark, I. D., *et al.*) 3 699

### Meteoric ions, F<sub>2</sub> peak, OGO 6

- (Hanson, W. B., *et al.*) 28 5503

### Minor constituents, CH<sub>4</sub>, CO<sub>2</sub>, H<sub>2</sub>O, O<sub>3</sub>

- (Conrath, B. J., *et al.*) 30 5831

### Minor constituents, vertical transport mechanism

- (Hodges, R. R., Jr.) 25 4842



- Neutral atmosphere, thermosphere  
(von Zahn, U.) 28 5517
- Neutral atmosphere, thermosphere  
(Bitterberg, W., *et al.*) 28 5528
- Neutral constituents, mesosphere,  
thermosphere, model  
(Shimazaki, Tatsuo, *et al.*) 16 3221
- Nitric oxide  
(Strobel, D. F., *et al.*) 22 4307
- Nitric oxide, auroral arc [I]  
(Zipf, E. C., *et al.*) 31 6371
- Nitric oxide, thermosphere  
(Norton, Richard B., *et al.*) 19 3903
- Nitrous oxide, stratosphere, troposphere,  
Mainz, Germany  
(Schütz, K., *et al.*) 12 2230
- Noble gases, 43 km, 63 km  
(Bieri, R. H., *et al.*) 33 6731
- O/N<sub>2</sub> ratio, seasonal variation  
(Cox, L. P., *et al.*) 31 6271
- O<sub>2</sub>(<sup>1</sup>Δ<sub>g</sub>), hydrogen, nitrogen [I]  
(Brown, Robert L.) 19 3935
- Oxygen, auroral emissions  
(Noxon, J. F.) 10 1879
- Oxygen, F-region, airglow [d]  
(Peterson, Vern L.) 13 2613
- Oxygen, F-region, airglow [r]  
(Packer, Irene Gullede, *et al.*) 13 2616
- Oxygen, O<sub>2</sub>(<sup>1</sup>Δ<sub>g</sub>), O<sub>3</sub> [I]  
(Megill, L. R., *et al.*) 31 6398
- Oxygen, seasonal variation  
(Evans, J. V., *et al.*) 1 159
- Ozone, distribution  
(Dütsch, H. U.) 9 1707
- Ozone, subpolar region, winter,  
stratosphere  
(Randhawa, J. S.) 9 1693
- Positive ions  
(Goldberg, R. A., *et al.*) 1 133
- Stratopause, hydrogen, methane, water  
vapor  
(Scholz, T. G., *et al.*) 15 3049
- Densities and temperatures*
- Altitude dependence, artificial plasma  
clouds  
(Davis, John R., *et al.*) 1 171
- Antarctica, temperature inversions,  
surface, [br]  
(Phillip, H. R., *et al.*) 21 4161
- Diurnal variations, latitude, aurora  
(Newton, George P.) 28 5510
- Doppler, exosphere [I]  
(Hays, P. B., *et al.*) 25 4881
- Global, Nimbus 3  
(Conrath, B. J., *et al.*) 30 5831
- Heating, tides, solar, semidiurnal,  
thermosphere [br]  
(Lindzen, Richard S., *et al.*) 33 6868
- Hydrogen, atomic  
(Meier, R. R., *et al.*) 34 6969
- Hydrogen, exosphere, OGO 6 [I]  
(Metzger, P. H., *et al.*) 28 5587
- Hydrogen, H. Lyman, exosphere, Mariner  
5  
(Wallace, L., *et al.*) 19 3769
- Hydrogen, models, hydrogen geocorona  
(Jones, R. A.) 34 6966
- Incoherent backscatter, Doppler  
broadening [I]  
(Cogger, L. L., *et al.*) 25 4887
- Meteoritic ions, OGO 6  
(Hanson, W. B., *et al.*) 28 5503
- N<sub>2</sub>, O<sub>2</sub>, O, Ar, He, thermosphere  
(Bitterberg, W., *et al.*) 28 5528
- Neutral atmosphere  
(von Zahn, U.) 28 5517
- Nitric oxide, thermosphere  
(Norton, Richard B., *et al.*) 19 3903
- Oxygen, atomic, F-region  
(Bauer, P., *et al.*) 25 4825
- Oxygen, electron concentration, airglow  
(Knudsen, William C.) 19 3862
- Oxygen, molecular  
(Quessette, Jacques Alain.) 4 839
- Oxygen, molecular, aurora  
(Opal, C. B., *et al.*) 4 788
- Retarding potential analyzer, OGO 6  
(Hanson, W. B., *et al.*) 28 5483
- Stratopause, 48 km, balloons  
(Ballard, Harold N., *et al.*) 18 3501
- Stratopause, 48 km, balloons  
(Beyers, Norman J., *et al.*) 18 3513
- Stratosphere, annual cycle, northern  
hemisphere [br]  
(Adelfang, S. I.) 27 5259
- Thermosphere, diurnal variations, solar  
wind [br]  
(Jacchia, Luigi G.) 22 4347
- Thermosphere, phase delay [I]  
(Volland, H.) 28 5618
- Zonal, northern hemisphere  
(Angell, J. K., *et al.*) 3 543
- Diffusion*
- Eddy, coefficient, emissions, O<sub>2</sub>(<sup>1</sup>Δ<sub>g</sub>),  
80-85 km [I]  
(Megill, L. R., *et al.*) 31 6398
- Eddy, gravity waves, internal [I]  
(Hines, C. O.) 19 3937
- Eddy, molecular, neutral atmosphere,  
mesosphere  
(Shimazaki, Tatsuo, *et al.*) 16 3221
- Eddy, molecular, nitric oxide  
(Strobel, D. F., *et al.*) 22 4307
- Thermosphere, unmixing, gravity waves  
(Hodges, R. R., Jr.) 25 4842

*Instruments*

- Lidar, optical radar, aerosols  
(Schuster, Burton G.) 15 3123  
Michelson interferometer, Nimbus 3  
(Conrath, B. J., *et al.*) 30 5831  
Pressure, temperature, density,  
composition, balloons  
(Ballard, Harold N., *et al.*) 18 3501  
Retarding potential analyzer, OGO 6  
(Hanson, W. B., *et al.*) 28 5483

*Ionization processes*

- Cosmic rays, lower atmosphere  
(George, Michael J.) 19 3693  
Cosmic rays, polar regions  
(George, Michael J.) 16 3154  
D-region, x-rays [I]  
(Ganguly, S.) 28 5626  
Nitric oxide  
(Strobel, D. F., *et al.*) 22 4307  
Silicon, Leonid meteor shower, 110 km  
[I]  
(Ferguson, E. E., *et al.*) 22 4366  
Silicon, Leonid meteor shower, 110 km  
[C]  
(Ferguson, E. E., *et al.*) 34 7333

*Techniques*

- Differential phase, D-region, electron  
density profiles  
(von Biel, H. A., *et al.*) 25 4863  
Incoherent scatter, neutral density, neutral  
temperature  
(Bauer, P., *et al.*) 25 4825

*Theoretical studies*

- Convection, thermal, numerical methods  
(Faller, Alan J., *et al.*) 3 521

*Tides*

- Solar, semidiurnal, heating, thermosphere  
[br]  
(Lindzen, Richard S., *et al.*) 33 6868

*Turbulence*

- Eddy diffusion, gravity waves, internal [I]  
(Hines, C. O.) 19 3937  
Vortexes, Karman trail, dissipation process  
(Wilkins, Eugene M.) 6 1033

*Waves*

- Atmospheric tides, balloons  
(Beyers, Norman J., *et al.*) 18 3513  
ELF, apparent attenuation  
(Hughes, H. G., *et al.*) 15 2795  
Gravity, eclipse [I]  
(Chimonas, G., *et al.*) 4 875  
Gravity, F-region, disturbances  
(Hooke, William H.) 28 5535  
Gravity, internal, acoustic, electron  
content, fluctuations  
(Georges, T. M., *et al.*) 31 6295

- Gravity, internal, eclipse, solar  
(Chimonas, G.) 28 5545  
Gravity, internal, eddy diffusion [I]  
(Hines, C. O.) 19 3937  
Gravity, internal, F-region  
(Hooke, William H.) 34 7229  
Gravity, ionosphere, dispersion  
(Hines, C. O., *et al.*) 13 2563  
Gravity, ionosphere, hydromagnetic  
coupling  
(Kato, S., *et al.*) 13 2540  
Gravity, thermosphere, F-region, electron  
densities, Explorer 32  
(Dyson, P. L., *et al.*) 16 3200  
Gravity, thermosphere, transport  
mechanism  
(Hodges, R. R., Jr.) 25 4842  
Phase delay, temperature, density,  
thermosphere [I]  
(Volland, H.) 28 5618  
Sound, long period, rocket launches,  
thermosphere [I]  
(Tolstoy, I., *et al.*) 28 5621  
Wave propagation, dispersion bandwidth  
(Gossard, Earl E., *et al.*) 7 1324

*Winds*

- E-region, ion densities [br]  
(Whitehead, J. D.) 19 3919  
Equatorial, stratosphere  
(Belmont, A. D., *et al.*) 15 3133  
Irregular, 100 km, structure, distribution  
(Justus, C. G.) 12 2171  
Stratopause, 48 km, balloons  
(Ballard, Harold N., *et al.*) 18 3501  
Thermosphere, 90 km, 140 km, solar  
radiation [br]  
(Hicks, J. E., *et al.*) 28 5565  
Zonal, above 200 km, [br]  
(Bedinger, J. F.) 3 683  
Zonal, northern hemisphere  
(Angell, J. K., *et al.*) 3 543

*Africa**Petrology*

- East, petrogenesis, Sr-87/Sr-86  
(Spooner, C. M., *et al.*) 32 6706  
Mauritania, Tenoumer crater, melt rock,  
meteoric origin  
(French, Bevan M., *et al.*) 23 4396

*Tectonophysics*

- Afar, Red Sea, Gulf of Aden  
(Mohr, P. A.) 35 7340

*Asia**Earthquakes*

- Japan, Kyushu, October 1963  
(Bollinger, G. A.) 5 955



- Hydrology**  
 Japan, juvenile water, isotope ratios,  
 Nasudake volcanic area  
 (Kusakabe, Minoru, *et al.*) 30 5941
- Meteorology**  
 Aerosols, radioactive tracers, precipitation,  
 India  
 (Bhandari, N., *et al.*) 15 2974  
 Circulation, tritium, diurnal, variations,  
 Japan  
 (Kigoshi, Kunihiro, *et al.*) 15 2981  
 Diffusion, dust, volcanic, Bali, Mount  
 Agung, 1963, Indonesia  
 (Dyer, A. J.) 15 3007  
 Particles, fallout debris, plutonium, Japan  
 (Miyake, Y., *et al.*) 12 2329
- Paleomagnetism**  
 India, Deccan traps  
 (Athavale, R. N.) 20 4000  
 Japan, intensity, 10,000 years, present  
 (Kitazawa, Kazuhiro.) 35 7403
- Petrology**  
 India, petrogenesis, Sr-87/Sr-86  
 (Spoonner, C. M., *et al.*) 32 6706
- Tectonophysics**  
 Central, faults, thrust, earthquakes  
 (Fitch, Thomas J.) 14 2699
- Asteroids**  
**Mechanics**  
 433 Eros, 1620 Geographos, exploration  
 [I]  
 (Staley, D. O.) 28 5571
- Astrophysics and solar physics**  
**Astronomy**  
 X-ray, background, particle flux, low  
 energy, 120 km, [br]  
 (Hill, R. W., *et al.*) 34 7267
- Corona**  
 Diffusion, heavy ions  
 (Alloucherie, Y.) 34 6899  
 Solar wind, ions, composition, abundance,  
 [I]  
 (Lange, J., *et al.*) 31 6350  
 Solar wind, ions, composition [I]  
 (Holzer, T. E., *et al.*) 31 6354  
 Turbulence, solar wind  
 (Hollweg, Joseph V.) 19 3715
- Electromagnetic radiation**  
 EUV emissions, OSO 3, solar rotation  
 (Hall, L. A., *et al.*) 34 6959  
 EUV spectrum, time variations  
 (Timothy, Adrienne F., *et al.*) 34 6950  
 EUV, x-rays, solar eclipse, E-region  
 (Bomke, Hans A., *et al.*) 34 6980  
 Gamma rays, Sun  
 (Womack, E. Allen, *et al.*) 10 1811  
 Gamma rays, 0.51 Mev  
 (Ramaty, R., *et al.*) 7 1141
- Microwave bursts, distribution,  
 asymmetry [br]  
 (Das Gupta, M. K., *et al.*) 34 7250  
 Solar radio centers, magnetic storms  
 (Lapointe, S. M., *et al.*) 34 6991  
 Ultraviolet, 1968, July 13–August 9,  
 variations  
 (Prag, A. B., *et al.*) 25 4613  
 X-ray emissions, Ha emissions, flares [I]  
 (Sakurai, Kunitomo.) 1 225  
 X-ray emissions, Ha emissions, flares [d]  
 (Kahler, S.) 28 5637  
 X-ray emissions, Ha emissions, flares [r]  
 (Sakurai, Kunitomo.) 28 5642  
 X-rays, cosmic, ionosphere, D-region,  
 electrons  
 (Francey, R. J.) 25 4849
- Flares**  
 Distribution, asymmetry, November 1966,  
 September 1969 [br]  
 (Das Gupta, M. K., *et al.*) 34 7250  
 Particle radiation, magnetosphere, trapped  
 particles  
 (Claflin, E. Scott, *et al.*) 7 1257  
 Particle radiation, protons, SPAND  
 (Greenhill, J. G., *et al.*) 25 4595  
 Proton, solar radio bursts, 19 GHz  
 (Croom, D. L.) 34 6940  
 Proton, x-rays, Ha emissions [d]  
 (Kahler, S.) 28 5637  
 Proton, x-rays, Ha emissions [r]  
 (Sakurai, Kunitomo.) 28 5642  
 Protons, 15 Mev, February 1965, intensity  
 profiles  
 (O'Gallagher, J. J.) 7 1163  
 Solar wind plasma, anisotropy  
 (Forman, Miriam A.) 16 3147  
 Solar wind shock, He-enriched driver gas  
 (Hirshberg, J., *et al.*) 1 1  
 Solar wind, shock waves, Vela 3, Vela 4  
 (Hundhausen, A. J., *et al.*) 25 4631  
 Solar wind, shock waves, 1966, July 7  
 (Landt, Jeremy A., *et al.*) 25 4623  
 X-ray emissions, Ha emissions. [I]  
 (Sakurai, Kunitomo.) 1 225  
 X-rays, August 17, 1966  
 (Horstman, H. M., *et al.*) 7 1157
- Instruments**  
 Gamma ray spectrometer, balloon-borne  
 (Womack, E. Allen, *et al.*) 10 1811  
 Ultraviolet spectrum, Spades satellite  
 (Prag, A. B., *et al.*) 25 4613
- Magnetic fields**  
 Interplanetary space, sector structure,  
 sunspot cycle, maximum, 1968 [I]  
 (Wilcox, John M., *et al.*) 31 6366  
 Sun, dominant polarity [I]  
 (Wilcox, John M.) 13 2587

*Particle radiation*

- Hydrogen, atomic, large fluxes, 800 km  
[I]  
(Wax, R. L., *et al.*) 31 6390
- Neutron flux, high-energy, solar, angular  
distribution, energy [I]  
(Heidbreder, E., *et al.*) 31 6347
- Positrons, low energy, galactic origin  
(Ramaty, R., *et al.*) 7 1141
- Protons, solar wind magnetic fields  
(O'Gallagher, J. J.) 7 1163
- Solar wind, helium  
(Robbins, D. E., *et al.*) 7 1178

*Surface phenomena*

- EUV spectrum, sunspots  
(Timothy, Adrienne F., *et al.*) 34 6950
- Flares, microwave bursts, distribution,  
asymmetry [br]  
(Das Gupta, M. K., *et al.*) 34 7250
- Solar bursts, millimeter wavelengths [br]  
(Feix, G.) 1 211
- Sun, calcium plage regions, ultraviolet,  
temperature  
(Prag, A. B., *et al.*) 25 4613
- Sunspots, cycle, maximum, interplanetary  
space, magnetic field, sector structure  
[I]  
(Wilcox, John M., *et al.*) 31 6366
- Sunspots, magnetosphere, micropulsations,  
Pc 1  
(Fraser-Smith, A. C.) 25 4735
- Sunspots, minimum, SAR arcs [I]  
(Marovich, E.) 25 4893
- Unipolar magnetic regions, M-regions,  
magnetic storms  
(Lapointe, S. M., *et al.*) 34 6991

*Techniques*

- Radio interferometry, refractive  
corrections [I]  
(Dickinson, Dale F., *et al.*) 8 1619

*Theoretical studies*

- Convection, thermal, numerical methods  
(Faller, Alan J., *et al.*) 3 521

**Atlantic Ocean***Geochemistry*

- Mid-Atlantic ridge, basalts  
(Kay, R., *et al.*) 8 1585
- Tristan da Cunha island, St. Helena  
island, mantle, lead, isotopic  
(Oversby, Virginia M., *et al.*) 11 2097

*Geophysical surveys*

- Canary islands, seismic, gravity  
(Bosshard, E., *et al.*) 26 4901
- Caribbean sea, Mid-Atlantic ridge, heat  
flow  
(Von Herzen, R. P., *et al.*) 11 1973

Iceland, Reykjanes peninsula, precision  
leveling

(Tryggvason, Eysteinn.) 23 4407

*Gravity surveys*

Southeast, Gibraltar, shipborne [I]  
(Kogan, M. G., *et al.*) 11 2137

*Magnetic surveys*

Canary islands, Cape Verde islands  
(Rona, Peter A., *et al.*) 35 7412

*Marine geology*

North, Blake outer ridge, hydrodynamic  
model  
(Bryan, George M.) 24 4530

North, Blake-Bahama outer ridge  
(Markl, R. G., *et al.*) 24 4539

Sedimentation, Labrador Sea, Norwegian  
Sea  
(Jones, E. J. W., *et al.*) 9 1655

Structure, Antilles, Barbados [d]  
(Scholl, David W., *et al.*) 2 488

*Meteorology*

Aerosols, particles, size distribution  
(Quenzel, H.) 15 2915

Aerosols, West Indies, Barbados island  
(Blifford, Irving H., Jr.) 15 3099

Composition, nitrous oxide, Barbados  
island  
(LaHue, Miles D., *et al.*) 15 2922

Electrical phenomena, space charge, West  
Indies, Barbados  
(Gathman, Stuart G., *et al.*) 24 4525

Fallout debris, Sr<sup>90</sup>, North America  
(Freudenthal, Peter C.) 21 4089

Particles, dust, concentrations  
(Parkin, D. W., *et al.*) 9 1782

*Oceanography*

Bermuda, internal waves, thermocline,  
permanent  
(Wunsch, Carl, *et al.*) 30 5899

Caribbean sea, deep-water renewal  
(Sturges, Wilton.) 36 7602

Forecasting, ocean-wave spectra  
(Bunting, D. C.) 21 4131

North, sea water, optical properties, Long  
Island Sound, Block Island Sound,  
Argus Island  
(Morrison, Robert E.) 3 612

Sea ice, drift, Gulf of St. Lawrence [br]  
(Farmer, D., *et al.*) 15 2863

Sea ice, ice floes, roughness parameter,  
Gulf of St. Lawrence [br]  
(Johannessen, Ola M.) 15 2857

Sea ice, wind stress, turbulence, Gulf of  
St. Lawrence  
(Smith, S. D., *et al.*) 15 2803



*Seismic surveys*

- Gulf of Mexico, P-waves, traveltimes,  
velocity increase  
(Hales, A. L., *et al.*) 35 7362

*Tectonophysics*

- Heat flow, Caribbean sea, Gulf of Mexico  
(Epp, David, *et al.*) 29 5655  
Heat flow, Iceland, thermal structure,  
magnetotelluric data, seismic data  
(Hermance, J. F., *et al.*) 32 6582  
Mid-Atlantic ridge, sea-floor spreading,  
earthquakes, swarms  
(Sykes, Lynn R.) 32 6598

*Aurora**Absorption*

- Cosmic radio noise, particle precipitation,  
electrons  
(Leinbach, H., *et al.*) 34 7099  
Particle precipitation, electrons, energy  
spectra  
(Christensen, Andrew B., *et al.*) 22 4266

*Auroral zone*

- Auroral break-up, particle precipitation  
[br]  
(Bernstein, W., *et al.*) 19 3915  
Auroral oval, magnetic fields, 1100 km  
(Zmuda, A. J., *et al.*) 25 4757  
Neutral atmosphere, heat source  
(Newton, George P.) 28 5510  
Particle precipitation, electrons, whistlers  
(Parks, George K.) 19 3802  
Particle precipitation, proton  
(Rees, M. H., *et al.*) 25 4763  
Particle precipitation, protons, electrons,  
energy spectra  
(Chase, L. M.) 34 7128  
Particle precipitation, rapid variations [I]  
(Arnoldy, R. L.) 1 228  
Properties, electron densities, electron  
temperatures, magnetic effects  
(Dyson, P. L., *et al.*) 10 1893

*Electric fields*

- Arcs, model  
(Atkinson, G.) 25 4746  
Electrojet, magnetic tail, electron event,  
Vela 3A, Imp 3 [I]  
(Meng, C. I., *et al.*) 34 7294  
Electrojet, polar  
(Potter, Wentworth E.) 28 5415  
Emissions, oxygen  
(Noxon, J. F.) 10 1879  
Field-aligned currents  
(Armstrong, J. C., *et al.*) 34 7122  
Field-aligned currents, space-charge  
regions  
(Carlqvist, Per, *et al.*) 34 7140

- Particle precipitation, electron [I]  
(Maral, G.) 13 2601  
Particle precipitation [I]  
(Arnoldy, R. L.) 1 228

*Emissions*

- Hydrogen, 0.5-22.0 kev  
(Wax, R. L., *et al.*) 4 783  
Hydroxyl [br]  
(Harrison, A. W.) 7 1330  
Nitrogen, oxygen, intensity ratios [I]  
(Duysinx, R., *et al.*) 13 2606  
Nitrogen, x-rays, particle precipitation,  
electron  
(Christensen, Andrew B., *et al.*) 22 4266  
Nitrogen, 2827 Å, 3119 Å [I]  
(Dick, K. A.) 28 5609  
Nitrogen, 4278 Å, micropulsations,  
conjugate phenomena  
(Campbell, W. H.) 31 6182  
Oxygen  
(Noxon, J. F.) 10 1879  
Oxygen, anomalous IR [I]  
(Schiff, H. I., *et al.*) 22 4363  
Oxygen, molecular  
(Megill, L. R., *et al.*) 25 4775  
Oxygen, nitrogen [I]  
(Dick, K. A.) 28 5605  
SAR arcs  
(Hoch, R. J., *et al.*) 13 2511  
SAR arcs, thermal conduction model  
(Roble, R. G., *et al.*) 22 4261  
Ultraviolet, far, equatorial  
(Hicks, G. T., *et al.*) 31 6233  
Ultraviolet, OGO 4  
(Chubb, T. A., *et al.*) 7 1290  
Ultraviolet, oxygen  
(Opal, C. B., *et al.*) 4 788  
Ultraviolet, vacuum  
(Peek, H. Milton.) 31 6209

*General*

- Composition, atmospheric, nitric oxide [I]  
(Zipf, E. C., *et al.*) 31 6371

*Instruments*

- Ultraviolet spectrum, OGO 4  
(Chubb, T. A., *et al.*) 7 1290

*Magnetic fields*

- Auroral activity, Alberta, Canada [br]  
(Hoch, R. J., *et al.*) 10 1935  
Auroral oval, continuity  
(Buchau, Jurgen, *et al.*) 34 7147  
Auroral substorms, electrons, accelerations  
(Lezniak, T. W., *et al.*) 34 7075  
Auroral substorms, magnetic tail,  
electrons, sudden enhancement  
(Hones, E. W., Jr., *et al.*) 34 7060  
Electrojet, polar  
(Potter, Wentworth E.) 28 5415



- Field-aligned currents [l]  
 (Cloutier, P. A., *et al.*) 13 2595
- Magnetic storms, densities, temperatures  
 (Evans, J. V.) 25 4803
- Micropulsations, Alfvén waves  
 (Coroniti, F. V., *et al.*) 10 1863
- Properties, ionosphere, 1000 km  
 (Dyson, P. L., *et al.*) 10 1893
- SAR arcs, local time, alignment, position  
 [br]  
 (Glass, N. W., *et al.*) 13 2579
- Transverse disturbances, field-aligned  
 currents  
 (Armstrong, J. C., *et al.*) 34 7122
- Transverse disturbances, 1100 km  
 (Zmuda, A. J., *et al.*) 25 4757
- Morphology**  
 Auroral oval, auroral electrojet, magnetic  
 tail  
 (Hones, E. W., Jr., *et al.*) 34 7060
- Auroral oval, continuity  
 (Buchau, Jurgen, *et al.*) 34 7147
- Motions, particle precipitation [l]  
 (Maral, G.) 13 2601
- Motions, SAR arcs, local time behavior  
 [br]  
 (Glass, N. W., *et al.*) 13 2579
- Motions, space-charge regions,  
 field-aligned currents  
 (Carlqvist, Per, *et al.*) 34 7140
- Orientations, SAR arcs, local time  
 behavior [br]  
 (Glass, N. W., *et al.*) 13 2579
- Time variations, particle precipitation,  
 auroral substorms  
 (Whalen, B. A., *et al.*) 1 123
- Observations**  
 Alberta, Canada [br]  
 (Hoch, R. J., *et al.*) 10 1935
- Auroral pulsations, Fort Churchill,  
 Canada [br]  
 (Parkinson, T. D., *et al.*) 7 1334
- SAR arc, Australia [br]  
 (Glass, N. W., *et al.*) 13 2579
- SAR arcs, Richland, Washington  
 (Hoch, R. J., *et al.*) 13 2511
- SAR arcs, Richland, Washington [l]  
 (Marovich, E.) 25 4893
- SAR arcs, September 28-29, 1967,  
 Alouette 2  
 (Roble, R. G., *et al.*) 22 4261
- Theoretical studies**  
 Arcs, ionosphere, magnetosphere, electric  
 currents  
 (Atkinson, G.) 25 4746
- Micropulsations  
 (Coroniti, F. V., *et al.*) 10 1863
- Australia**  
*Absolute age*  
 Victoria, Port Campbell, tektites  
 (Gill, Edmund D.) 5 996
- Victoria, Port Campbell, tektites [c]  
 (Gill, Edmund D.) 32 6729
- Geochemistry*  
 Tektites, composition  
 (Leake, Bernard E.) 2 349
- Cenozoic**  
*Atlantic Ocean*  
 Eocene, horizon A  
 (Ewing, J., *et al.*) 29 5645
- Continental drift*  
 Pangaea  
 (Dietz, Robert S., *et al.*) 26 4939
- Gulf of Mexico*  
 Pleistocene, temperatures [br]  
 (Sackett, William M., *et al.*) 24 4557
- Pacific Ocean*  
 Coral Sea, sediments  
 (Ewing, John I., *et al.*) 11 1963
- Paleomagnetic stratigraphy  
 (Foster, John H., *et al.*) 23 4465
- Continental drift**  
*Causes*  
 Convection, mantle, nonlinear effects [l]  
 (Rice, Alan.) 2 491
- Crustal structure*  
 Mountain building, plate tectonics  
 (Dewey, John F., *et al.*) 14 2625
- Paleogeography*  
 Pangaea, Paleozoic, Mesozoic, Cenozoic  
 (Dietz, Robert S., *et al.*) 26 4939
- Paleomagnetism*  
 Polar wandering [d]  
 (Francheteau, Jean, *et al.*) 5 1023
- Polar wandering [r]  
 (Irving, E., *et al.*) 5 1027
- Deformation**  
*Experimental studies*  
 Creep, brittle, uniaxial compression  
 (Cruden, D. M.) 17 3431
- Creep, fracture strength, brittle rocks, [d]  
 (Scholz, C. H.) 11 2148
- Fractures, residual elastic strain,  
 sandstones, quartzose  
 (Friedman, M., *et al.*) 2 387
- Fractures, thermoelastic stresses, volcanic  
 seismicity  
 (Warren, Nicholas W., *et al.*) 23 4455
- Kink bands, mica  
 (Hörz, Friedrich.) 5 965
- Shock, tonalite, novaculite, playa alluvium  
 (Petersen, Carl F., *et al.*) 11 2063
- Shock, tuffs, Hugoniot  
 (Lysne, P. C.) 23 4375

- Thermal expansion, garnet, inclusions,  
diamond  
(Harris, J. W., *et al.*) 29 5775
- Theoretical studies**  
Elasticity, polycrystalline rocks [d]  
(Weidner, Donald, *et al.*) 14 2787  
Elasticity, polycrystalline rocks [r]  
(Kumazawa, Mineo.) 14 2790  
Plastic flow, viscous solids [d]  
(Thompson, Erik G., *et al.*) 8 1625  
Stress components, porous medium, fluid  
(Schiffman, Robert L.) 20 4035
- Earthquakes**  
**Energy**  
Stress estimates, South America  
(Wyss, Max.) 8 1529  
Stress, shear waves, spectra  
(Brune, James N.) 26 4997  
**General**  
Chandler wobble, wobble excitation  
(Myerson, Robert J.) 32 6612  
Island arcs, heat generation  
(Minear, John W., *et al.*) 8 1397  
Sea-floor spreading  
(Sykes, Lynn R.) 32 6598  
**Japan**  
Kyushu, October 1963  
(Bollinger, G. A.) 5 955  
**Mechanism**  
**Asia**  
(Fitch, Thomas J.) 14 2699  
Deep earthquakes  
(Knopoff, L., *et al.*) 26 4957  
Deep earthquakes, linear vector dipole  
(Randall, M. J., *et al.*) 26 4965  
Volcanic seismicity, thermoelastic stresses,  
microfractures  
(Warren, Nicholas W., *et al.*) 23 4455  
**North America**  
Alaska, March 1964, focal mechanisms  
(Kanamori, Hiroo.) 26 5029  
**Pacific Ocean**  
Indonesia, Philippine islands  
(Fitch, Thomas J., *et al.*) 8 1431  
Kuril islands, October 1963, surface  
waves, long period  
(Kanamori, Hiroo.) 26 5011
- Elastic properties**  
**Experimental studies**  
Shock, Hugoniot, release adiabat  
(Petersen, Carl F., *et al.*) 11 2063  
Structures, cubic, pressure, NaCl, CsCl,  
ZnS  
(Anderson, Orson L.) 14 2719  
**Garnet**  
Thermal expansion, diamond, inclusions  
(Harris, J. W., *et al.*) 29 5775
- Hortonolite dunite**  
Elastic constants, composition [br]  
(Mao, Nai-hsien, *et al.*) 20 4071
- Olivine**  
Iron/magnesium ratio, elastic waves,  
velocities  
(Chung, D. H.) 35 7353
- Polycrystalline rocks**  
Elastic constants, inelastic properties [d]  
(Weidner, Donald, *et al.*) 14 2787  
Elastic constants, inelastic properties [r]  
(Kumazawa, Mineo.) 14 2790
- Rutile**  
Elastic constants, 7.5 kb [c]  
(Manghnani, Murli H.) 11 2151
- Theoretical studies**  
Compressional waves, shear waves,  
velocities, elastic constants [br]  
(Sammis, Charles, *et al.*) 23 4478  
Wachman-Anderson relation, accuracy  
(Pastine, D. John.) 35 7421  
Wave propagation, compressional velocity,  
density [l]  
(Anderson, Don L.) 8 1623
- Tuffs**  
Hugoniot, release adiabats  
(Lysne, P. C.) 23 4375
- Electrical surveys**  
**United States**  
Wisconsin arch, resistivity  
(Dowling, Forrest L.) 14 2683
- Erosion**  
**Beaches**  
Sand transport, longshore currents  
(Komar, Paul D., *et al.*) 30 5914
- Theoretical studies**  
Sand bed stability, shear flow  
(Smith, J. Dungan.) 30 5928
- Europe**  
**Meteorology**  
Composition, ammonia, ammonium  
sulfate, Great Britain  
(Healy, T. V., *et al.*) 12 2317  
Composition, isotopes seasonal variations,  
Finland  
(Mattsson, Rolf.) 9 1741  
Tritium, stratospheric injection,  
precipitation  
(Schell, W. R., *et al.*) 12 2251  
Water, tritium, Trondheim, Norway  
(Gulliksen, Steinar.) 12 2247
- Explosion phenomena**  
**Experimental studies**  
Cratering, scaling equations  
(Sun, James M. S.) 11 2003  
Shock phenomena, Hugoniot, release  
adiabats  
(Lysne, P. C.) 23 4375



- Yield, magnitude [1]  
(Evernden, J. F.) 5 1028
- Extraterrestrial geology**
- Mars*  
Polar caps, goethite, hematite, water  
(Pollack, James B., *et al.*) 35 7491  
Polar caps, goethite, hematite, water  
(Pollack, James B., *et al.*) 35 7480
- Moon*  
Craters, erosion  
(Chapman, Clark R., *et al.*) 8 1445  
Geochemistry, alpha-scattering  
(Economou, Thanasis E., *et al.*) 32 6514  
Internal structures, convection, model  
(Turcotte, D. L., *et al.*) 32 6549  
Mascons  
(Wise, Donald U., *et al.*) 2 261  
Mascons, gravity field  
(Booker, John R., *et al.*) 32 6558  
Petrology, basalt, mineralogy, petrogenesis, Apollo 11  
(Brown, G. Malcolm.) 32 6480  
Petrology, petrogenesis, basalt, Apollo 11, lunar origin  
(Ringwood, A. E.) 32 6453  
Petrology, soil, lunar crust, mascons  
(Wood, John A.) 32 6497  
Seismogram, secondary ejecta, Apollo 12, LM  
(Chang, G. K., *et al.*) 35 7426  
Surface, elastic properties, Surveyor  
(Sutton, George H., *et al.*) 35 7439  
Surface features, glasses, impact origin, composition  
(Chao, E. C. T., *et al.*) 35 7445  
Surface properties, optical, Apollo 11  
(O'Leary, Brian, *et al.*) 32 6532
- Faults**
- Experimental studies*  
Iceland, earthquakes, precision leveling  
(Tryggvason, Eysteinn.) 23 4407
- Mechanism*  
Island arcs  
(Malahoff, Alexander.) 11 1992
- Systems*  
California, San Andreas [d]  
(Byerlee, James D.) 2 499
- Thrust*  
Asia, central, earthquakes, mechanism  
(Fitch, Thomas J.) 14 2699  
Atlantic Ocean, Antilles, Barbados, seismic reflection profiles [d]  
(Scholl, David W., *et al.*) 2 488  
California, Benioff zones  
(Ernst, W. G.) 5 886
- Transform*  
Mechanism, convection currents, Coriolis force [br]  
(Howell, B. F., Jr.) 14 2769  
Pacific Ocean, north, sea-floor spreading  
(Rea, David K.) 8 1421
- Fractures**
- Experimental studies*  
Creep, brittle rocks [d]  
(Scholz, C. H.) 11 2148  
Residual elastic strain, sandstones, quartzose  
(Friedman, M., *et al.*) 2 387
- Zones*  
Pacific Ocean, north, sea-floor spreading  
(Rea, David K.) 8 1421
- General**
- Calendar*  
IUWDS International Geophysical Calendar, 1970  
(Shapley, A. H., *et al.*) 7 1349  
IUWDS International Geophysical Calendar, 1970, explanation, [1]  
(Shapley, A. H., *et al.*) 1 235
- Experimental studies*  
Van der Waals solids, melting temperatures, pressure [br]  
(Kennedy, G. C., *et al.*) 5 1019
- Mathematics*  
Magnetohydrodynamics, conservation theorem [1]  
(Dixon, R.) 25 4897
- Geochemistry**
- Abundance of elements*  
Carbon, oxygen [br]  
(Broecker, Wallace S.) 18 3553  
Lead, isotopic, Atlantic Ocean, Tristan da Cunha island, St. Helena island  
(Oversby, Virginia M., *et al.*) 11 2097  
Mantle, water, titanoclinohumite  
(McGetchin, T. R., *et al.*) 2 255  
Tektites, Australia  
(Leake, Bernard E.) 2 349
- Atmosphere*  
Aerosols, composition, Chicago, Illinois  
(Brar, S. S., *et al.*) 15 2939  
Aerosols, composition, genesis  
(Pötl, K.) 12 2347  
Aitken nuclei  
(Vohra, K. G., *et al.*) 15 2951  
Alkali metals, nitrogen, airglow  
(Allen, E. R.) 15 2947  
Ammonia, ammonium sulfate, Great Britain  
(Healy, T. V., *et al.*) 12 2317  
CO<sub>2</sub>, pure, photolysis [1]  
(Felder, W., *et al.*) 34 7311

- Composition, precipitation, USSR  
(Petrenchuk, O. P., *et al.*) 18 3629
- $H_3O^+ \cdot (H_2O)_n$ , D-region [l]  
(Swider, W.) 34 7299
- Hydroxyl emission, model, oxygen,  
hydrogen, eddy diffusion  
(Hesstvedt, Eigil.) 12 2337
- Ionosphere, D-region, hydrogen [l]  
(Burke, Rudolf R.) 7 1345
- Isotopes, Mediterranean region  
(Gat, J. R., *et al.*) 15 3039
- Nitric oxide, auroral arc, mass  
spectrometer [l]  
(Zipf, E. C., *et al.*) 31 6371
- $O_2(^1\Delta_g)$ , hydrogen, nitrogen [l]  
(Brown, Robert L.) 19 3935
- Oxygen,  $O_2(^1\Delta_g)$ ,  $O_3$  [l]  
(Megill, L. R., *et al.*) 31 6398
- Oxygen, polluted environment  
(Kummler, Ralph H., *et al.*) 15 3115
- Silicon, ionization, Leonid meteor shower  
[c]  
(Ferguson, E. E., *et al.*) 34 7333
- Sulfate  
(Georgii, Hans Walter.) 12 2365
- Sulfur dioxide, residence time  
(Weber, Erich.) 15 2909
- Basalts**  
Pacific Ocean, Atlantic Ocean  
(Kay, R., *et al.*) 8 1585
- Submarine, titanomagnetite, oxidation,  
magnetic properties  
(Ozima, Mituko, *et al.*) 5 1003
- General**  
Water, mantle, Earth, Venus [br]  
(Walker, J. C. G., *et al.*) 18 3558
- Meteorites**  
Chondrites, Bruderheim, Homestead,  
Allende  
(Chatelain, A., *et al.*) 29 5681
- Gadolinium, isotopic composition  
(Eugster, O., *et al.*) 14 2753
- Spallation, xenon  
(Hohenberg, C. M., *et al.*) 22 4205
- Xenon, carbonaceous chondrites, Leoville  
(Manuel, O. K., *et al.*) 29 5693
- Solid earth**  
Mantle, iron, petrological models  
(Wang, Chi-yuen.) 17 3264
- Sr-87/Sr-86, petrogenesis  
(Spooner, C. M., *et al.*) 32 6706
- Spherules**  
Cosmic, terrestrial, Pacific Ocean  
(Millard, H. T., Jr., *et al.*) 11 2125
- Tektites**  
Australia, composition, specific gravity,  
refractive index [l]  
(Scheiber, Leroy C.) 35 7513
- Water**  
Barium, Pacific Ocean, Geosecs, 1969  
(Wolgemuth, K.) 36 7686
- Carbon, Pacific Ocean, Geosecs, 1969  
(Kroopnick, P., *et al.*) 36 7668
- Carbon, radioactive, Pacific Ocean, north,  
Geosecs, 1969  
(Östlund, H. Göte, *et al.*) 36 7667
- Carbon-13, abyssal, Pacific Ocean, south  
[br]  
(Craig, H.) 3 691
- Carbonates, Pacific Ocean, east  
(Takahashi, Taro, *et al.*) 36 7648
- He<sup>3</sup>, excess, Pacific Ocean, north  
(Clarke, W. B., *et al.*) 36 7676
- Hydrates, clathrates, freezing temperature  
(Pena, Jorge, *et al.*) 15 2831
- Hydrates, clathrates, freezing temperature  
[c]  
(Pena, Jorge, *et al.*) 27 5296
- Isotope ratios, juvenile water, Japan,  
Nasudake volcanic area  
(Kusakabe, Minoru, *et al.*) 30 5941
- Precipitation, composition, Antarctica,  
east  
(Matveyev, A. A.) 18 3686
- Radium, Pacific Ocean, Geosecs, 1969  
(Broecker, Wallace, *et al.*) 36 7682
- Trace elements, Pacific Ocean, Geosecs,  
1969  
(Spencer, Derek W., *et al.*) 36 7688
- Tritium, Pacific Ocean, north, Geosecs,  
1969  
(Roether, Wolfgang, *et al.*) 36 7672
- Geochronology**  
**Fission-track**  
Epidote group  
(Naeser, C. W., *et al.*) 8 1579
- Thermoluminescence**  
Tektites  
(Durrani, S. A., *et al.*) 5 983
- Geodesy**  
**Figure of Earth**  
Geopotential, low order terms, satellites  
(Wagner, Carl A.) 32 6662
- Geopotential, satellite data, simple layer  
model  
(Koch, Karl Rudolf, *et al.*) 8 1483
- Isostasy**  
Theoretical studies  
(Dorman, LeRoy M., *et al.*) 17 3357
- Satellite measurements**  
Geopotential, low order terms, coefficients  
(Wagner, Carl A.) 32 6662
- Geopotential, satellite pairs [d]  
(Morrison, Foster.) 11 2142



- Techniques*
- Radio interferometry, refractive corrections [l] (Dickinson, Dale F., *et al.*) 8 1619
  - Vertical deflections, error autocorrelation function (Henrikson, Paul, *et al.*) 20 4017
- Glaciers**
- Canada*
    - Alberta, Athabasca, icequakes (Neave, K. G., *et al.*) 8 1351
  - Greenland*
    - Ice sheet, mass balance [br] (Federer, B., *et al.*) 24 4567
  - Theoretical studies*
    - Disturbances, wave propagation, surges (Lick, Wilbert.) 12 2189
- Gravity field, Earth**
- Isostasy*
    - North America, United States [c] (Lewis, Brian T. R., *et al.*) 23 4482
    - Theoretical study (Dorman, LeRoy M., *et al.*) 17 3357
  - Networks*
    - Satellite pairs [d] (Morrison, Foster.) 11 2142
  - North America*
    - United States, model (Lewis, Brian T. R., *et al.*) 17 3367
  - Observations*
    - Geopotential, low order terms, coefficients, satellites (Wagner, Carl A.) 32 6662
    - Geopotential, simple layer model (Koch, Karl Rudolf, *et al.*) 8 1483
  - Spatial variations*
    - North America, gravity high, mid-continent (Mooney, Harold M., *et al.*) 26 5056
  - Theoretical studies*
    - Gravitational tides, core (Suess, Steven T.) 32 6650
    - Island arcs, heat generation, sea-floor spreading, rates (Minear, John W., *et al.*) 8 1397
- Gravity field, Moon**
- Mascons*
    - Genesis (Wise, Donald U., *et al.*) 2 261
    - Predicted, dynamical asymmetry (Booker, John R., *et al.*) 32 6558
  - Theoretical studies*
    - Earth, gravitational tides, core (Suess, Steven T.) 32 6650
- Gravity methods**
- Instruments*
    - Quartz accelerometer, wide-band frequency response (Block, Barry, *et al.*) 8 1493
    - Tidal meters, electrostatic feedback (Moore, Robert D., *et al.*) 5 928
  - Techniques*
    - Vertical deflections, error autocorrelation function (Henrikson, Paul, *et al.*) 20 4017
    - Wave number domain, magnetic fields (Kanasewich, E. R., *et al.*) 29 5702
- Gravity surveys**
- Alaska*
    - Katmai National Monument (Kienle, Jürgen.) 32 6641
  - Arctic region*
    - Alpha cordillera, sea-floor spreading (Vogt, P. R., *et al.*) 26 4925
  - Atlantic Ocean*
    - Canary islands (Bossard, E., *et al.*) 26 4901
    - Southeast, Gibraltar [l] (Kogan, M. G., *et al.*) 11 2137
  - California*
    - Mono basin [d] (Pakiser, L. C.) 20 4077
    - Mono basin [r] (Christensen, M. N., *et al.*) 20 4081
    - Mono basin [r] (Pakiser, L. C.) 20 4083
  - Illinois*
    - Regional, tectonics (McGinnis, L. D.) 2 317
  - New Zealand*
    - North Island (Hatherton, Trevor.) 2 269
- Gulf of Mexico**
- Oceanography*
    - Bottom currents, Hurricane Camille [br] (Murray, Stephen P.) 24 4579
    - Carbon, organic, water masses (Fredericks, Alan D., *et al.*) 12 2199
    - Circulation, current patterns, variations (Leipper, Dale F.) 3 637
    - Salinity, Mississippi river, microwave radiometry (Droppleman, J. D., *et al.*) 30 5909
  - Paleoclimatology*
    - Pleistocene, Sigsbee knolls [br] (Sackett, William M., *et al.*) 24 4557
- Heat flow**
- Conductivity*
    - Experimental study, infrared spectra (Aronson, J. R., *et al.*) 17 3443
    - Mantle, radiative heat (Shankland, T. J.) 2 409

- Seismology, Debye temperature  
(Horai, Ki-iti, *et al.*) 5 978
- Heat sources**  
California, radiogenic heat, prebatholithic  
rocks, Sierra Nevada  
(Wollenberg, Harold A., *et al.*) 2 431
- Plutons  
(Lachenbruch, Arthur H.) 17 3291
- Instruments**  
Thermal conductivity, continuous  
measurement  
(Costain, John K.) 20 3969
- Interpretation**  
New Zealand, North Island, mantle  
(Hatherton, Trevor.) 2 269
- Pacific Ocean, Hawaiian arch, volcanism  
(Sclater, J. G., *et al.*) 2 333
- Pacific region, Juan de Fuca ridge  
(Lister, C. R. B.) 14 2648
- Surface effects, conductivity, geothermal  
gradient  
(Horai, Ki-iti, *et al.*) 11 1985
- Measurement**  
Caribbean sea, Gulf of Mexico  
(Epp, David, *et al.*) 29 5655
- Pacific Ocean, Philippine islands,  
Amchitka island, Alaska  
(Sass, J. H., *et al.*) 23 4387
- Regional patterns**  
Atlantic Ocean, Caribbean sea,  
Mid-Atlantic ridge  
(Von Herzen, R. P., *et al.*) 11 1973
- Hydrology**  
**Evaporation**  
Reflectance, solar radiation, monolayers  
(Beard, J. Taylor, *et al.*) 27 5155
- Experimental studies**  
Evaporation, reflectance, solar radiation,  
monolayers  
(Beard, J. Taylor, *et al.*) 27 5155
- General**  
Geysers, drilled well, Lake county,  
Oregon [br]  
(Rinehart, John S.) 32 6714
- Juvenile water, isotope ratios, Japan,  
Nasudake volcanic area  
(Kusakabe, Minoru, *et al.*) 30 5941
- Tritium, Crater Lake, Oregon [br]  
(Leventhal, J. S., *et al.*) 36 7628
- Glaciers**  
Disturbances, wave propagation, surges  
(Lick, Wilbert.) 12 2189
- Greenland, ice sheet, mass balance [br]  
(Federer, B., *et al.*) 24 4567
- Icequakes, Alberta, Athabasca glacier  
(Neave, K. G., *et al.*) 8 1351
- Ground water**  
Buried heat source, nuclear explosions,  
Aardvark  
(Reed, Walter E.) 2 415
- Ice**  
Firn snow, Antarctica, Adélie coast,  
tritium  
(Ravoire, J., *et al.*) 12 2331
- Limnology**  
Electrical phenomena, space charge,  
mechanism  
(Gathman, Stuart G., *et al.*) 6 1041
- Fallout debris, Sr<sup>90</sup>, Crater Lake, Oregon  
(Volchok, H. L., *et al.*) 6 1084
- Fallout debris, Sr<sup>90</sup>, Lake Michigan  
(Machta, L., *et al.*) 6 1092
- Tritium, precipitation, Crater Lake,  
Oregon  
(Simpson, H. James.) 27 5195
- Precipitation**  
Antarctica, Adélie coast, firn snow,  
tritium  
(Ravoire, J., *et al.*) 12 2331
- Canada, Calgary, Cd<sup>109</sup>, [br]  
(Ezemenari, F. R. C., *et al.*) 27 5271
- Composition, USSR  
(Petrenchuk, O. P., *et al.*) 18 3629
- Fallout debris, aerosols  
(Nguyen Ba Cuong, *et al.*) 15 2877
- Mediterranean region, Levant  
(Gat, J. R., *et al.*) 15 3039
- Radioactive tracers, Hadley cell  
(Bhandari, N., *et al.*) 15 2974
- Trace elements, concentrations, USSR  
(Drozdova, V. M., *et al.*) 18 3610
- Tritium, Crater Lake, Oregon  
(Simpson, H. James.) 27 5195
- Tritium, Europe, western  
(Schell, W. R., *et al.*) 12 2251
- Tritium, Norway, Trondheim  
(Gulliksen, Steinar.) 12 2247
- Snow**  
Slab failure, model  
(Perla, R. I., *et al.*) 36 7619
- Techniques**  
Age determinations, ice isotopes, Ar<sup>37</sup>,  
Ar<sup>39</sup>, Kr<sup>81</sup>  
(Loosli, H. H., *et al.*) 15 2895
- Ice, frost, thermal conductivity [br]  
(Mulligan, J. C.) 21 4180
- Theoretical studies**  
Evaporation, reflectance, solar radiation,  
monolayers  
(Beard, J. Taylor, *et al.*) 27 5155



**Igneous rocks***Basalt*

- Composition, magnetic minerals,  
rotational hysteresis  
(Day, R., *et al.*) 2 375
- Geochemistry, petrology, Atlantic Ocean,  
Pacific Ocean  
(Kay, R., *et al.*) 8 1585
- Physical properties, compressional waves,  
velocities, Pacific Ocean [br]  
(Christensen, Nikolas I.) 14 2773

*Hortonolite dunite*

- Composition, elastic properties [br]  
(Mao, Nai-hsien, *et al.*) 20 4071

*Melting*

- Meteoritic origin, Tenoumer crater,  
Mauritania  
(French, Bevan M., *et al.*) 23 4396

*Tonalite*

- Physical properties, Hugoniot, release  
adiabat  
(Petersen, Carl F., *et al.*) 11 2063

*Ultramafic*

- Inclusion, Moses Rock, Utah [c]  
(Gavasci, A. T., *et al.*) 23 4481

*Volcanic ash*

- Alaska, Katmai National Monument  
(Gedney, Larry, *et al.*) 14 2619

**Indian Ocean***Meteorology*

- Circulation, fallout debris,  
interhemispheric mixing  
(Rangarajan, C., *et al.*) 9 1753
- Circulation, interhemispheric mixing,  
fallout debris  
(Peirson, D. H., *et al.*) 9 1760
- Circulation, interhemispheric mixing,  
fallout debris  
(Dmitriyeva, G. V., *et al.*) 18 3675
- Circulation, monsoon air mass, radon  
(Rama.) 12 2227

*Oceanography*

- Somali current system, monsoon,  
southwest [br]  
(Bruce, J. G.) 21 4170
- Water masses, Antarctic Ocean, radium  
[br]  
(Ku, T. L., *et al.*) 27 5286
- Water masses, Antarctic Ocean, radium  
[d]  
(Edmond, John M.) 33 6878

*Tectonophysics*

- Afar, Gulf of Aden, sea-floor spreading  
(Mohr, P. A.) 35 7340

**Infrared methods***Experimental studies*

- Emission spectra, surface films [br]  
(Watson, Robert D.) 2 480
- Temperature, oceanic, spatial spectra,  
interpretation. [br]  
(McLeish, William.) 33 6872

**Infrared surveys***Moon*

- Surface, highlands, maria  
(Murcray, F. H., *et al.*) 14 2662
- Surface, highlands, maria  
(Salisbury, John W., *et al.*) 14 2671
- Surface, infrared spectra, silicates, spectral  
contrast, particle size  
(Logan, Lloyd M., *et al.*) 32 6539

**Interplanetary space***Comets*

- Tail, experimental studies, type 1 [I]  
(Kubo, Haruya, *et al.*) 10 1937

*Cosmic rays*

- Albedo, charged particle  
(König, P. J., *et al.*) 7 1172
- Albedo, OGO 6  
(Jenkins, R. W., *et al.*) 22 4197
- Cutoff rigidities, secular variations [I]  
(Shea, M. A., *et al.*) 19 3921
- Diurnal variations, albedo  
(Jenkins, Robert W., *et al.*) 10 1802
- Electron intensities [I]  
(Marsden, P. L., *et al.*) 34 7280
- Experimental studies, cascades, Mn<sup>54</sup>,  
Zn<sup>65</sup>, copper  
(Ginneken, A. Van, *et al.*) 26 5121
- Flares, ionosphere, disturbances, x-ray  
emissions, H $\alpha$  emissions [I]  
(Sakurai, Kunitomo.) 1 225
- Geomagnetic cutoffs, directional,  
loop-cone phenomenon, midlatitudes  
(Cooke, D. J., *et al.*) 31 5961
- Intensity, diurnal anisotropy [I]  
(Kane, R. P.) 22 4350
- Intensity, micropulsations  
(Dhanju, M. S., *et al.*) 10 1795
- Ionization, lower atmosphere  
(George, Michael J.) 19 3693
- Ionization, lower atmosphere [I]  
(O'Brien, K.) 22 4357
- Ionization, polar regions  
(George, Michael J.) 16 3154
- Magnetic tail  
(Lanzerotti, L. J., *et al.*) 19 3729
- Na<sup>24</sup>, troposphere  
(Roedel, Walter.) 15 3033
- Neutron flux, solar, high-energy [I]  
(Heidbreder, E., *et al.*) 31 6347

- Neutron monitors, barometric coefficient, altitude dependence [l]  
(Singh, P., *et al.*) 22 4354
- OGO 2, OGO 4  
(George, Michael J.) 16 3159
- Positrons, galactic  
(Ramaty, R., *et al.*) 7 1141
- Propagations, anisotropies, geostationary satellites [l]  
(Gall, Ruth, *et al.*) 34 7284
- Semi-diurnal anisotropy  
(Rao, U. R., *et al.*) 13 2391
- Solar cycles, diurnal anisotropy, nucleonic component  
(Duggal, S. P., *et al.*) 7 1150
- Solar flares, February 1965  
(O'Gallagher, J. J.) 7 1163
- Solar proton flares [d]  
(Kahler, S.) 28 5637
- Solar proton flares [r]  
(Sakurai, Kunitomo.) 28 5642
- Spallation, argon, atmosphere  
(Young, J. A., *et al.*) 12 2385
- Spallation, argon, atmosphere  
(Loosli, H. H., *et al.*) 15 2895
- Threshold rigidity, magnetic storms [br]  
(Wolfson, C. J., *et al.*) 28 5553
- Variations, density gradient, ecliptic plane [l]  
(Swinson, Derek B.) 34 7303
- Variations, meteorites  
(Fireman, E. L., *et al.*) 11 2115
- Variations, time, Forbush decreases, solar modulation  
(Lockwood, J. A., *et al.*) 34 6885
- Electromagnetic radiation*  
Quasi-trapped, solar wind  
(Scarf, F. L., *et al.*) 19 3735
- General*  
Hydrogen, atomic, 1 kev, 800 km [l]  
(Wax, R. L., *et al.*) 31 6390
- Satellites, steady state electron sheath  
(Guernsey, Ralph L., *et al.*) 16 3193
- Instruments*  
Dual frequency experiment, Pioneer 6  
(Landt, Jeremy A., *et al.*) 25 4623
- Neutron monitors, barometric coefficient, altitude dependence [l]  
(Singh, P., *et al.*) 22 4354
- Satellite sheath structure, ion measurements  
(Parker, L. W., *et al.*) 25 4720
- Satellites, steady state electron sheath  
(Guernsey, Ralph L., *et al.*) 16 3193
- Unidirectional sensors, cosmic rays, geostationary satellites [l]  
(Gall, Ruth, *et al.*) 34 7284
- Interplanetary dust*  
Clouds, noctilucent [br]  
(Frank, Evelyn R., *et al.*) 33 6853
- Clouds, noctilucent [br]  
(Ferry, Guy V.) 33 6857
- Meteor showers, Orionid, Leonid, ionosphere  
(Ferry, G. V., *et al.*) 4 859
- Models, size, hyperbolic distribution  
(Bader, Henri.) 15 2822
- Orbital elements, Pioneer 8  
(Berg, Otto E., *et al.*) 34 6932
- Particles, noctilucent clouds  
(Farlow, Neil H., *et al.*) 33 6736
- Particles, noctilucent clouds  
(Fechtig, H., *et al.*) 33 6751
- Ionosphere*  
*Airglow*  
Alkali metals, nitrogen  
(Allen, E. R.) 15 2947
- Emissions, O<sub>2</sub>(<sup>1</sup>Δ<sub>g</sub>) [l]  
(Megill, L. R., *et al.*) 31 6398
- Equatorial, midlatitude  
(Sparrow, J. G., *et al.*) 28 5475
- H Lyman α emissions, solar minimum  
(Meier, R. R., *et al.*) 22 4224
- H Lyman α, OGO  
(Mange, P., *et al.*) 10 1837
- Hydroxyl emissions [br]  
(Harrison, A. W.) 7 1330
- Mechanism, oxygen  
(Knudsen, William C.) 19 3862
- Night, latitude distribution [l]  
(Sharp, W. E., *et al.*) 25 4894
- Nitric oxide  
(Norton, Richard B., *et al.*) 19 3903
- Nitrogen emissions, molecular, photoelectrons  
(Doering, J. P., *et al.*) 25 4787
- OI 4368 Å [l]  
(Tinsley, Brian A.) 19 3932
- Oxygen, atomic [d]  
(Peterson, Vern L.) 13 2613
- Oxygen, atomic [r]  
(Packer, Irene Gulledge, *et al.*) 13 2616
- Photoelectrons, impact excitation, photoionization [br]  
(Stewart, A. I.) 31 6333
- Ultraviolet, tropical, Ogo 4  
(Barth, C. A., *et al.*) 22 4299
- Ultraviolet, depressions, polar  
(Meier, R. R.) 31 6218
- Ultraviolet, far, equatorial  
(Hicks, G. T., *et al.*) 31 6233
- Ultraviolet, OGO 4  
(Chubb, T. A., *et al.*) 7 1290
- Ultraviolet, production mechanisms [br]  
(Hanson, W. B.) 22 4343



*Albedo*

- Charged particle, latitude dependence  
(König, P. J., *et al.*) 7 1172
- CRAND, latitude dependence, altitude dependence  
(Jenkins, R. W., *et al.*) 22 4197
- Neutron flux, high-energy, solar, angular distribution [I]  
(Heidbreder, E., *et al.*) 31 6347
- SPAND, flares [br]  
(Macy, William W., *et al.*) 22 4322
- SPAND, flares, protons  
(Greenhill, J. G., *et al.*) 25 4595

*Currents*

- Auroral oval, 1000 km  
(Dyson, P. L., *et al.*) 10 1893
- Electrojet, equatorial, Peru  
(Burrows, K.) 7 1319
- Field-aligned, auroral oval, 1100 km  
(Zmuda, A. J., *et al.*) 25 4757
- Field-aligned sheet currents, auroral arcs [I]  
(Cloutier, P. A., *et al.*) 13 2595
- Field-aligned, space-charge regions, aurora  
(Carlqvist, Per, *et al.*) 34 7140
- Field-aligned, 1100 km  
(Armstrong, J. C., *et al.*) 34 7122
- Low latitude, airglow [br]  
(Hanson, W. B.) 22 4343
- Magnetic storms, substorms, polar [br]  
(Rostoker, G., *et al.*) 31 6318
- Meridional, equatorial electrojet [I]  
(Closs, R. L.) 13 2611
- Ring, trapped particles, magnetic storms  
(Frank, L. A.) 7 1263
- Ring, eddy diffusion, protons  
(Cornwall, John M., *et al.*) 25 4699
- Ring, magnetic storms, main phase  
(Cole, K. D.) 22 4216
- Ring, particle precipitation  
(Liu, Chuan Sheng.) 19 3789
- Ring, protons, energy transfer, electrons [br]  
(Swift, Daniel W.) 31 6324
- Ring, variations, Sq  
(Olson, W. P.) 34 7244

*D-region*

- Electron density profiles  
(von Biel, H. A., *et al.*) 25 4863
- Electron production rates [c]  
(Thrane, E. V.) 7 1348
- Electrons, cosmic x-rays  
(Francey, R. J.) 25 4849
- Electrons, production, loss  
(Reid, George C.) 13 2551
- H<sub>2</sub>O · (H<sub>2</sub>O)<sub>n</sub>, source [I]  
(Swider, W.) 34 7299

- Ionization processes, x-rays [I]  
(Ganguly, S.) 28 5626

- Ionization rates, particle precipitation, electron  
(Potemra, T. A., *et al.*) 34 7161
- Oxygen, photoionization [br]  
(Clark, I. D., *et al.*) 3 699

*Disturbances*

- Auroral oval, 1000 km  
(Dyson, P. L., *et al.*) 10 1893
- Auroral pulsations [br]  
(Parkinson, T. D., *et al.*) 7 1334
- Barium ion clouds, striations  
(Linson, Lewis M., *et al.*) 16 3211
- Cross-field instability, turbulence  
(Williams, Robert H., *et al.*) 34 7217
- E-region, sporadic E, drift observations  
(Armstrong, R. J., *et al.*) 1 183
- E-region, type II irregularities  
(Rogister, A., *et al.*) 19 3879
- Electron density, electron temperature, magnetic storms [br]  
(Lakshmi, D. R., *et al.*) 22 4335
- Electron trough, solar cycles, rising  
(Miller, N. J.) 34 7175
- Electron-wake measurements, Explorer 8, Ariel 1  
(Samir, Uri.) 4 855
- F-region, heating, optical detection, O<sub>2</sub>(<sup>1</sup>Δ<sub>g</sub>)  
(Evans, W. F. J., *et al.*) 31 6425
- F-region, heating, radio waves  
(Meltz, G., *et al.*) 31 6406
- F-region, heating, radio waves, Boulder, Colorado  
(Whitehead, J. D.) 31 6417
- F-region, heating, radio waves, observations, ionograms  
(Utlaut, W. F., *et al.*) 31 6429
- F-region, heating, radio waves, radio reflectivity  
(Cohen, Robert, *et al.*) 31 6439
- F-region, heating, time response, rapid  
(LeLevier, R. E.) 31 6419
- F-region, spread-F, heating, amplification, radio waves, self-focusing  
(Georges, T. M.) 31 6436
- Gravity waves, F-region  
(Hooke, William H.) 28 5535
- Gravity waves, internal, solar eclipses  
(Chimonas, G.) 28 5545
- Gravity waves, ion densities, photoionization  
(Hooke, William H.) 34 7239
- Heating, HF waves, Boulder, Colorado  
(Utlaut, W. F.) 31 6402

- Heating, mechanism, radio waves,  
penetration frequency  
(Thomson, J. Alex.) 31 6446
- Ion clouds, artificial, growth, stability  
(Simon, Albert.) 31 6287
- Scintillations, sunspot cycles  
(Walker, G. O., *et al.*) 13 2517
- Solar eclipse, November 1965,  
magnetosphere  
(van der Laan, Jan E.) 7 1312
- Spread-F  
(Farley, D. T., *et al.*) 34 7199
- Spread-F, scintillations, causes  
(Huang, Chun-ming.) 25 4833
- VLF duct, model  
(Gross, S. H.) 22 4235
- VLF, ELF, solar flares  
(Field, E. C.) 10 1927
- X-ray emissions, H $\alpha$  emissions, cosmic  
rays, flares [l]  
(Sakurai, Kunitomo.) 1 225
- X-ray emissions, H $\alpha$  emissions, cosmic  
rays, flares [d]  
(Kahler, S.) 28 5637
- E-region*
- Diurnal model  
(Keneshea, T. J., *et al.*) 4 845
- Ion production, EUV, x-rays, solar eclipse  
(Bomke, Hans A., *et al.*) 34 6980
- Sporadic-E, drift observations  
(Armstrong, R. J., *et al.*) 1 183
- Sporadic-E, formation  
(Linson, Lewis M., *et al.*) 16 3211
- Electric fields*
- Aurora [l]  
(Arnoldy, R. L.) 1 228
- Conductivity, magnetosphere, convection  
(Wolf, R. A.) 25 4677
- Dynamo region, magnetosphere  
(Matsushita, S., *et al.*) 28 5433
- Electron drift velocity, equatorial  
electrojet  
(Balsley, Ben B.) 22 4291
- Electrostatic waves, particles, acceleration  
[br]  
(Swift, Daniel W.) 31 6324
- Equatorial, east-west, vertical drift  
velocities  
(Woodman, Ronald F.) 31 6249
- Ion clouds, artificial, growth, stability  
(Simon, Albert.) 31 6287
- Particle acceleration [l]  
(Laval, G., *et al.*) 16 3255
- Plasmasphere, bulge  
(Carpenter, D. L.) 19 3837
- Space-charge regions, field-aligned  
currents, aurora  
(Carlqvist, Per, *et al.*) 34 7140
- Electrojet*
- Aurora, auroral oval, magnetic tail  
(Hones, E. W., Jr., *et al.*) 34 7060
- Auroral, electron event, magnetic tail,  
Vela 3A, Imp 3 [l]  
(Meng, C. I., *et al.*) 34 7294
- Equatorial, meridional currents [l]  
(Closs, R. L.) 13 2611
- Equatorial, Peru  
(Balsley, Ben B.) 22 4291
- Equatorial, rocket measurements  
(Shuman, B. M.) 19 3889
- Equatorial, seasonal variations, reversal  
times [l]  
(Balsley, Ben B.) 22 4369
- Equatorial, type II irregularities  
(Rogister, A., *et al.*) 19 3879
- Equatorial, vertical drift velocities,  
F-region  
(Woodman, Ronald F.) 31 6249
- Magnetic substorms, polar, westward  
motion [br]  
(Rostoker, G., *et al.*) 31 6318
- Magnetotelluric fields, model  
(Hermance, J. F., *et al.*) 17 3351
- Polar, aurora  
(Potter, Wentworth E.) 28 5415
- Electron content*
- Anomalies, longitudinal [br]  
(Rosa, A. V. da, *et al.*) 34 7276
- D-region, particle precipitation  
(Potemra, T. A., *et al.*) 34 7161
- D-region, production, loss  
(Reid, George C.) 13 2551
- Densities, airglow, mechanism  
(Knudsen, William C.) 19 3862
- Densities, equatorial anomaly [l]  
(Wu, Mao-Fou.) 28 5612
- Densities, Faraday factor  
(Smith, D. H.) 4 823
- Densities, profiles, D-region  
(von Biel, H. A., *et al.*) 25 4863
- Densities, reflecting zones, thickness, MF  
[l]  
(Gregory, J. B., *et al.*) 31 6387
- Densities, temperatures, magnetic storms  
(Evans, J. V.) 25 4803
- Densities, temperatures, OGO 4  
(Chandra, S., *et al.*) 19 3867
- Densities, temperatures, topside  
(Prasad, S. S.) 10 1911
- Densities, thermosphere, gravity waves  
(Dyson, P. L., *et al.*) 16 3200
- Densities, UT control, F-region, polar [br]  
(Pike, C. P.) 25 4871
- E-region, diurnal model  
(Keneshea, T. J., *et al.*) 4 845

- E-region, EUV, x-rays, solar eclipse  
(Bomke, Hans A., *et al.*) 34 6980
- Electron production, cosmic x-rays,  
D-region  
(Francey, R. J.) 25 4849
- Electron production rates, D-region [c]  
(Thrane, E. V.) 7 1348
- Electron/ion temperature ratios, Thomson  
scattering  
(Wand, R. H.) 4 829
- F-region, airglow [l]  
(Tinsley, Brian A.) 19 3932
- F-region, heating, radio waves  
(Meltz, G., *et al.*) 31 6406
- F-region, heating, radio waves, Boulder,  
Colorado  
(Whitehead, J. D.) 31 6417
- F-region, heating, radio waves, optical  
detection, 6300 Å  
(Biondi, A. A., *et al.*) 31 6421
- F-region, heating, time response  
(LeVier, R. E.) 31 6419
- F-region, spread-F, VHF radar  
(Farley, D. T., *et al.*) 34 7199
- Fluctuations, wave-induced, gravity waves,  
acoustic waves  
(Georges, T. M., *et al.*) 31 6295
- Ionospheric trough, movements, OGO 5  
[l]  
(Rycroft, Michael J., *et al.*) 28 5600
- Magnetic storms [br]  
(Lakshmi, D. R., *et al.*) 22 4335
- Oblique echoes, upper hybrid resonance,  
topside  
(Graff, Philippe.) 34 7193
- Photoelectron fluxes, atmosphere,  
predawn, sunlit  
(Nagy, A. F., *et al.*) 31 6260
- Plasma temperatures, magnetosphere  
(Sanatani, S., *et al.*) 4 769
- Plasmapause, [br]  
(Harris, K. K., *et al.*) 1 219
- Suprathermal fluxes, temperatures, high  
latitudes, Explorer 31  
(Maier, E. J., *et al.*) 34 7168
- Temperature, F-region [l]  
(Cogger, L. L., *et al.*) 25 4887
- Temperature, HF waves, Boulder,  
Colorado  
(Utlaut, W. F.) 31 6402
- Temperature, plasma resonance, beat  
patterns [br]  
(Warnock, J. M., *et al.*) 34 7272
- Temperature, Langmuir probe, incoherent  
scatter radar [l]  
(Carlson, H. C., *et al.*) 25 4883
- Temperature, magnetic storms  
(Evans, J. V.) 25 4815
- Trough, 1000 km, Explorer 22, November  
1964, February 1967  
(Miller, N. J.) 34 7175
- F-region*
- Airglow, equatorial, midlatitude  
(Sparrow, J. G., *et al.*) 28 5475
- Airglow, OI 4368-Å [l]  
(Tinsley, Brian A.) 19 3932
- Airglow, oxygen, atomic [d]  
(Peterson, Vern L.) 13 2613
- Airglow, oxygen, atomic [r]  
(Packer, Irene Gulledge, *et al.*) 13 2616
- Electron densities, thermosphere, gravity  
waves, Explorer 32  
(Dyson, P. L., *et al.*) 16 3200
- Electron temperature, magnetic storms  
(Evans, J. V.) 25 4815
- ELF wave propagation  
(Galejs, Janis.) 13 2529
- Equatorial anomaly [l]  
(Wu, Mao-Fou.) 28 5612
- Field-aligned irregularities  
(Baggaley, W. J.) 1 152
- Gravity waves, internal  
(Hooke, William H.) 28 5535
- Gravity waves, internal  
(Hooke, William H.) 34 7229
- Heating, amplification, radio waves,  
self-focusing  
(Georges, T. M.) 31 6436
- Heating, HF waves, Boulder, Colorado  
(Utlaut, W. F.) 31 6402
- Heating, mechanism, radio waves,  
penetration frequency  
(Thomson, J. Alex.) 31 6446
- Heating, parameters, Boulder, Colorado  
(Whitehead, J. D.) 31 6417
- Heating, radio waves  
(Meltz, G., *et al.*) 31 6406
- Heating, radio waves, Boulder, Colorado,  
observations, ionograms  
(Utlaut, W. F., *et al.*) 31 6429
- Heating, radio waves, optical detection,  
6300 Å  
(Biondi, A. A., *et al.*) 31 6421
- Heating, radio waves, optical detection,  
O<sub>2</sub>(<sup>1</sup>Δ<sub>g</sub>)  
(Evans, W. F. J., *et al.*) 31 6425
- Heating, radio waves, time response  
(LeVier, R. E.) 31 6419
- HF backscatter echoes  
(Bates, Howard F., *et al.*) 1 165
- Ion densities, gravity waves, internal  
(Hooke, William H.) 34 7239
- O/N<sub>2</sub> ratio, seasonal variation  
(Cox, L. P., *et al.*) 31 6271
- Polar, UT control, electron densities [br]  
(Pike, C. P.) 25 4871



- Protonosphere, coupling flux  
(Park, C. G.) 22 4249
- Radio reflectivity, heating, artificial  
(Cohen, Robert, *et al.*) 31 6439
- Spread-F, cross-field instability  
(Williams, Robert H., *et al.*) 34 7217
- Spread-F, equatorial, VHF radar  
(Farley, D. T., *et al.*) 34 7199
- Spread-F, scintillations, causes  
(Huang, Chun-ming.) 25 4833
- Temperatures, densities, magnetic storms  
(Evans, J. V.) 25 4803
- Temperatures, incoherent scatter, Doppler broadening [I]  
(Cogger, L. L., *et al.*) 25 4887
- Temperatures, radar, optical, 300 km [I]  
(Hays, P. B., *et al.*) 25 4881
- Vertical drift velocities, electrojet, equatorial  
(Woodman, Ronald F.) 31 6249
- VLF duct, model  
(Gross, S. H.) 22 4235
- Instruments**
- Electron spectrometer  
(Doering, J. P., *et al.*) 25 4787
- Quadrupole mass spectrometer  
(Goldberg, R. A., *et al.*) 1 133
- Retarding potential analyzer, OGO 6  
(Hanson, W. B., *et al.*) 28 5483
- Satellite sheath structure, ion measurements  
(Parker, L. W., *et al.*) 25 4720
- Ultraviolet spectrum, OGO 4  
(Chubb, T. A., *et al.*) 7 1290
- VLF electric field antenna, impedance, plasma density  
(Koons, H. C., *et al.*) 13 2490
- Ion densities and temperatures**
- Antenna impedance, VLF  
(Koons, H. C., *et al.*) 13 2490
- D-region, particle precipitation, electrons, ionization rates  
(Potemra, T. A., *et al.*) 34 7161
- E-region, diurnal model  
(Keneshea, T. J., *et al.*) 4 845
- E-region, ion production, EUV, x-rays  
(Bomke, Hans A., *et al.*) 34 6980
- E-region, winds [br]  
(Whitehead, J. D.) 19 3919
- Electron/ion temperature ratios, Thomson scattering  
(Wand, R. H.) 4 829
- F-region, airglow [I]  
(Tinsley, Brian A.) 19 3932
- F-region, gravity waves, internal  
(Hooke, William H.) 34 7239
- F-region, heating, radio waves  
(Meltz, G., *et al.*) 31 6406
- F-region, heating, radio waves, optical detection, 6300 Å  
(Biondi, A. A., *et al.*) 31 6421
- F-region, radar, optical, 300 km [I]  
(Hays, P. B., *et al.*) 25 4881
- Hydrogen  
(Meier, R. R., *et al.*) 34 6969
- Magnetic storms  
(Evans, J. V.) 25 4803
- Magnetic storms  
(Evans, J. V.) 25 4815
- Meteoric ions, OGO 6  
(Hanson, W. B., *et al.*) 28 5503
- O/N<sub>2</sub> ratio, seasonal variation  
(Cox, L. P., *et al.*) 31 6271
- Oxygen, airglow  
(Knudsen, William C.) 19 3862
- Oxygen, aurora  
(Noxon, J. F.) 10 1879
- Oxygen, helium, topside, diurnal variations  
(Prasad, S. S.) 10 1911
- Oxygen, molecular, 110-170 km  
(Quessette, Jacques Alain.) 4 839
- Oxygen, photoionization, D-region [br]  
(Clark, I. D., *et al.*) 3 699
- Plasma temperatures, magnetosphere  
(Sanatani, S., *et al.*) 4 769
- Plasmapause  
(Chappell, C. R., *et al.*) 1 50
- Plasmapause, OGO 5 [br]  
(Harris, K. K., *et al.*) 1 219
- Plasmasphere, bulge, morphology  
(Chappell, C. R., *et al.*) 19 3848
- Plasmasphere, plasmapause, OGO 5, 0.8 R<sub>E</sub>, 7.0 R<sub>E</sub>  
(Serbu, G. P., *et al.*) 31 6102
- Protonospheric heating, conjugate point sunrise  
(Rao, B. C. Narasinga, *et al.*) 4 816
- Quadrupole mass spectrometer  
(Goldberg, R. A., *et al.*) 1 133
- Ratio, atomic ions, molecular ions, Thomson scattering  
(Evans, J. V., *et al.*) 1 159
- Retarding potential analyzer, OGO 6  
(Hanson, W. B., *et al.*) 28 5483
- Silicon, Leonid meteor shower, 110 km [c]  
(Ferguson, E. E., *et al.*) 34 7333
- Silicon, 110 km, Leonid meteor shower. [I]  
(Ferguson, E. E., *et al.*) 22 4366
- Topside, OGO 4  
(Chandra, S., *et al.*) 19 3867
- Topside sounder profiles, interpretation [I]  
(Mayr, H. G., *et al.*) 13 2608

*Ionization processes*

- Photoelectron fluxes, atmosphere,  
predawn, sunlit  
(Nagy, A. F., *et al.*) 31 6260

- Photoionization, coefficients,  
photoelectrons, airglow [br]  
(Stewart, A. I.) 31 6333

*Particle precipitation*

- Aurora  
(Noxon, J. F.) 10 1879

- Aurora, airglow  
(Chubb, T. A., *et al.*) 7 1290

- Auroral break-up [br]  
(Bernstein, W., *et al.*) 19 3915

- Auroral pulsations [br]  
(Parkinson, T. D., *et al.*) 7 1334

- Cold plasma injection, magnetosphere [l]  
(Brice, Neil.) 25 4890

- Conjugate mirror locations, world  
contours [br]  
(Barish, Franklin D., *et al.*) 31 6342

- Electron, auroral absorption, sudden  
commencements  
(Leinbach, H., *et al.*) 34 7099

- Electron, global  
(Parks, George K.) 19 3802

- Electron, high latitude, Explorer 31  
(Maier, E. J., *et al.*) 34 7168

- Electron, Injun 4  
(Craven, J. D.) 13 2468

- Electron, ionization rates, D-region  
(Potemra, T. A., *et al.*) 34 7161

- Electron, proton, energy spectra, auroral  
zone  
(Chase, L. M.) 34 7128

- Electrons  
(Imhof, W. L., *et al.*) 4 776

- Electrons, aurora [l]  
(Maral, G.) 13 2601

- Electrons, auroral substorms  
(Whalen, B. A., *et al.*) 1 123

- Electrons, energy spectra  
(Christensen, Andrew B., *et al.*) 22 4266

- Electrons, field-aligned currents [l]  
(Cloutier, P. A., *et al.*) 13 2595

- Electrons [l]  
(Dick, K. A.) 28 5605

- Electrons, micropulsations  
(Coroniti, F. V., *et al.*) 7 1279

- Electrons, substorms, azimuthal drift [l]  
(Rosen, L. H., *et al.*) 28 5576

- Hydrogen flux, aurora  
(Wax, R. L., *et al.*) 4 783

- Photoelectrons, conjugate phenomena,  
aurora  
(Evans, J. V., *et al.*) 4 807

- Photoelectrons, conjugate phenomena  
(Rao, B. C. Narasinga, *et al.*) 4 816

- Photoelectrons, conjugate phenomena  
(Nagy, A. F., *et al.*) 31 6260

- Photoelectrons, elastic scattering  
(Banks, P. M., *et al.*) 10 1902

- Photoelectrons, escape flux, midlatitudes  
[l]  
(Heikkila, W. J.) 25 4877

- Proton  
(Rees, M. H., *et al.*) 25 4763

- Rapid fluctuations, aurora [l]  
(Arnoldy, R. L.) 1 228

- Ring currents  
(Liu, Chuan Sheng.) 19 3789

- Two quasi-circular zones, magnetosphere,  
model  
(Mishin, V. M., *et al.*) 4 797

- VLF, pitch-angle scattering  
(Gendrin, R., *et al.*) 31 6169

*Scintillations*

- Sunspot cycles  
(Walker, G. O., *et al.*) 13 2517

*Techniques*

- Conjugate mirror locations, world  
contours [br]  
(Barish, Franklin D., *et al.*) 31 6342

- Electron temperature, plasma resonance,  
beat patterns [br]  
(Warnock, J. M., *et al.*) 34 7272

- Electron-wake measurements, Explorer 8,  
Ariel 1  
(Samir, Uri.) 4 855

- Pulsed dipole, inhomogeneous plasma  
(Fejer, J. A., *et al.*) 10 1919

- Radio reflectivity, F-region, heating  
(Cohen, Robert, *et al.*) 31 6439

*Wave propagation*

- Diffuse plasma resonances  
(Oya, Hiroshi.) 22 4279

- Dispersion bandwidth  
(Gossard, Earl E., *et al.*) 7 1324

- Electrostatic wave echoes, topside  
sounders, beat patterns [br]  
(Warnock, J. M., *et al.*) 34 7272

- ELF, apparent attenuation  
(Hughes, H. G., *et al.*) 15 2795

- ELF, F-region  
(Galejs, Janis.) 13 2529

- Gravity waves, dispersion, electric fields  
(Hines, C. O., *et al.*) 13 2563

- Gravity waves, internal, F-region  
(Hooke, William H.) 34 7229

- HF backscatter echoes, F-region  
(Bates, Howard F., *et al.*) 1 165

- HF, ground backscatter, retransmitted  
signal, Doppler shift [l]  
(Dearden, E. W.) 31 6382

- High frequency waves, aurora  
(Bates, Howard F.) 1 143
- Hydromagnetic, configuraton  
(Jenkins, Alvin W., Jr.) 19 3817
- Hydromagnetic coupling, neutral  
atmosphere  
(Kato, S., *et al.*) 13 2540
- Inhomogeneous plasma  
(Fejer, J. A., *et al.*) 10 1919
- Ion harmonic waves  
(Stéfant, Robert J.) 34 7182
- Long delayed radio echoes, mechanism,  
observations [l]  
(Crawford, F. W., *et al.*) 34 7326
- MF, reflecting regions, electron densities  
[l]  
(Gregory, J. B., *et al.*) 31 6387
- Micropulsations  
(Coroniti, F. V., *et al.*) 10 1863
- Parametric amplification, frequency  
mixing  
(Harker, K. J., *et al.*) 28 5459
- Plasma frequency resonance, cyclotron  
frequency  
(McAfee, J. R.) 22 4287
- Schumann resonances  
(Galejs, Janis.) 16 3237
- Subsidiary resonances, topside sounders  
[l]  
(Chen, C. S.) 31 6377
- Topside sounders, oblique echoes, upper  
hybrid resonance  
(Graff, Philippe.) 34 7193
- VHF, electron densities, Faraday factor  
(Smith, D. H.) 4 823
- VLF duct, model  
(Gross, S. H.) 22 4235
- VLF, electric fields  
(Kennel, C. F., *et al.*) 31 6136
- VLF, ELF, solar flares  
(Field, E. C.) 10 1927
- VLF noise, lower hybrid resonance  
frequency  
(Laaspere, T., *et al.*) 1 97
- VLF, particles, low energies, low altitude,  
pitch-angle scattering  
(Gendrin, R., *et al.*) 31 6169
- VLF, time delay, amplitude, polarization  
(Gendrin, R., *et al.*) 31 6153
- Whistlers, amplification  
(Lee, J. C., *et al.*) 1 85
- Whistlers, Injun 5 [l]  
(Gurnett, Donald A., *et al.*) 7 1342
- Whistlers, VLF  
(Allcock, G. McK., *et al.*) 13 2503
- Whistlers, VLF signals  
(Scarabucci, R. R.) 1 69
- Luminescence**  
*Basalt*  
Hydrogen beams, 3-17 kev  
(Snouse, Thomas W., *et al.*) 8 1573
- Silica*  
Hydrogen beams, 3-17 kev  
(Snouse, Thomas W., *et al.*) 8 1573
- Tektites*  
Thermoluminescence, geochronology  
(Durrani, S. A., *et al.*) 5 983
- Magnetic field, Earth**  
*Magnetotelluric currents*  
Model, Cagniard's relation, electrojets  
(Hermance, J. F., *et al.*) 17 3351
- Wisconsin arch, United States  
(Dowling, Forrest L.) 14 2683
- Models*  
Dipole, eccentric, radial, secular  
variations [d]  
(Lowe, F. J.) 32 6723
- Dipole, eccentric, radial, secular  
variations [r]  
(Alldredge, L. R., *et al.*) 32 6725
- IGRF 1965.0 [l]  
(Mead, Gilbert D.) 22 4372
- Non-uniqueness, external field, magnitude  
measurements [br]  
(Backus, George E.) 31 6339
- Reference field, satellite data [l]  
(Cain, Joseph C., *et al.*) 22 4360
- Reversals, statistical models [br]  
(Cox, Allan.) 35 7501
- Paleomagnetism*  
Deccan traps, India  
(Athavale, R. N.) 20 4000
- Permian, temperature, invertebrate fossils  
(Stehli, Francis G.) 17 3325
- Precambrian, North America, Minnesota,  
Keweenaw intrusive rocks  
(Beck, Myrl E., Jr.) 26 4985
- Techniques, alternating-frequency  
demagnetization, thermal  
demagnetization  
(Merrill, Ronald T.) 17 3343
- Sea-floor spreading*  
Anomalies, short-wavelength lineations,  
origin [d]  
(Peter, George.) 32 6717
- Anomalies, short-wavelength lineations,  
origin [r]  
(Luyendyk, Bruce P.) 32 6721
- Atlantic Ocean, Canary islands, Cape  
Verde islands  
(Rona, Peter A., *et al.*) 35 7412
- Paleomagnetic stratigraphy, Pacific Ocean  
(Foster, John H., *et al.*) 23 4465



*Spatial variations*

- Atlantic Ocean, Canary islands, Cape Verde islands  
(Rona, Peter A., *et al.*) 35 7412
- External field, non-uniqueness, magnitude measurements [br]  
(Backus, George E.) 31 6339
- Lineations, short-wavelength, ocean bottom [d]  
(Peter, George.) 32 6717
- Lineations, short-wavelength, ocean bottom [r]  
(Luyendyk, Bruce P.) 32 6721
- Local, Peru, equatorial electrojet, magnetotelluric currents  
(Balsley, Ben B.) 22 4291
- Magnetotelluric currents, electrojets, model, Cagniard's relation  
(Hermance, J. F., *et al.*) 17 3351
- North America, regional geology, satellite data  
(Zietz, Isidore, *et al.*) 20 4007
- Reference fields, IGRF 1965.0 [l]  
(Mead, Gilbert D.) 22 4372
- Reference fields, satellite data [l]  
(Cain, Joseph C., *et al.*) 22 4360
- Sea-floor spreading, North Atlantic, smooth zones  
(Vogt, P. R., *et al.*) 20 3955

*Time variations*

- Geomagnetic index, real time [l]  
(Joselyn, Jo Ann.) 14 2777
- Intensity, Sudbury eruptive, Canada  
(Schwarz, E. J., *et al.*) 32 6631
- Intensity, 10,000 years, present, Japan  
(Kitazawa, Kazuhiro.) 35 7403
- Magnetic storms, spherical harmonic analysis, September 1958  
(Anderssen, R. S., *et al.*) 13 2569
- Micropulsations, Pc 1, sunspots  
(Fraser-Smith, A. C.) 25 4735
- Polar wandering, continental drift [d]  
(Francheteau, Jean, *et al.*) 5 1023
- Polar wandering, continental drift [r]  
(Irving, E., *et al.*) 5 1027
- Reversals, statistical models [br]  
(Cox, Allan.) 35 7501
- Secular, solar annual [l]  
(McDonald, Keith L.) 28 5631
- Semiannual, cause, Kelvin-Helmholtz instability, "equinoctial" hypothesis  
(Boller, Bruce R., *et al.*) 31 6073

**Magnetic methods**

*Techniques*

- Automatic data processing, least squares analyses  
(Foster, M. R., *et al.*) 8 1507

- Wave number domain, gravity fields  
(Kanasewich, E. R., *et al.*) 29 5702

**Magnetic properties**

*Basalt*

- Rotational hysteresis  
(Day, R., *et al.*) 2 375
- Submarine, titanomagnetite, oxidation state  
(Ozima, Mituko, *et al.*) 5 1003

*Nickel, magnetite*

- Thermoremanence, internal stress [d]  
(Fuller, Michael, *et al.*) 14 2781
- Thermoremanence, internal stress [r]  
(Shive, Peter N.) 14 2785

**Magnetic surveys**

*Arctic region*

- Alpha cordillera, sea-floor spreading  
(Vogt, P. R., *et al.*) 26 4925
- Greenland Sea, Norwegian Sea, sea-floor spreading  
(Vogt, Peter R., *et al.*) 5 903

**Magnetosphere**

*Bow shock waves*

- Interplanetary medium, shock waves [c]  
(Fairfield, D. H.) 28 5644
- Ion acoustic waves, dispersion  
(Biskamp, D.) 25 4659
- Location, solar maximum, 1969  
(Egidi, A., *et al.*) 34 6999
- Magnetic field fluctuations, microstructure, Pioneer 7, Pioneer 8  
(Mariani, F., *et al.*) 31 6037
- Mariner 5  
(Smith, Edward J., *et al.*) 7 1233
- Plasma instabilities  
(Montgomery, Michael D., *et al.*) 7 1217

- Positive ion deceleration  
(Neugebauer, Marcia.) 4 717
- Proton fluxes, spectrometer, OGO 5  
(Ossakow, S. L., *et al.*) 31 6024
- Protons, suprathermal, waves, large-amplitude, upstream [l]  
(Sarf, F. L., *et al.*) 34 7316
- Solar wind, turbulence, electrostatic, OGO 5  
(Fredricks, R. W., *et al.*) 19 3751
- Stationary waves, thin current sheets  
(Perez, J. K., *et al.*) 31 6011
- Turbulent structure, perpendicular fast shocks, high- $\beta$  plasma  
(Coroniti, F. V.) 34 7007

*Configuration*

- Cosmic rays, geomagnetic cutoffs  
(Flindt, Herbert R.) 1 39
- Cosmic rays, low energy, latitude profiles [br]  
(McDiarmid, I. B., *et al.*) 19 3910

- Cosmic rays, magnetic fields  
(Lanzerotti, L. J., *et al.*) 19 3729
- Ion acoustic waves, dispersion  
(Biskamp, D.) 25 4659
- Magnetic storms, Explorer 26  
(Cahill, Laurence J., Jr.) 19 3778
- Magnetic tail, neutral line [l]  
(Dessler, A. J., *et al.*) 34 7323
- Magnetic tail, substorms  
(Fairfield, D. H., *et al.*) 34 7032
- Model, compressible corotation [br]  
(Schulz, Michael.) 31 6329
- Model, observations, ATS 1  
(Olson, W. P., *et al.*) 34 7117
- Model, two quasi-circular precipitation zones  
(Mishin, V. M., *et al.*) 4 797
- Polar substorms [br]  
(Meng, C. I.) 16 3252
- Ring currents, trapped particles  
(Lackner, K.) 16 3180
- Spherical harmonic analysis, satellite data [l]  
(Cain, Joseph C., *et al.*) 22 4360
- Trapped particles, magnetic storms  
(Frank, L. A.) 7 1263
- Wave propagation, hydromagnetic  
(Jenkins, Alvin W., Jr.) 19 3817
- Coordinate systems*
- Local time, corrected geomagnetic midnight [l]  
(Montbriand, L. E.) 28 5634
- Proton intensities, magnetic shell parameter, universal time  
(Frank, L. A., *et al.*) 7 1269
- Reference field, satellite data [l]  
(Cain, Joseph C., *et al.*) 22 4360
- Trapped particles, Explorer 4 [l]  
(Lavine, James P., *et al.*) 10 1940
- Cosmic rays*
- Albedo, latitude dependence, OGO 6  
(Jenkins, R. W., *et al.*) 22 4197
- Cutoff rigidities, secular variations [l]  
(Shea, M. A., *et al.*) 19 3921
- Forbush decreases, solar modulation, cutoff rigidity  
(Lockwood, J. A., *et al.*) 34 6885
- Geomagnetic cutoffs, configuration, OGO 2, OGO 4  
(George, Michael J.) 16 3159
- Geomagnetic cutoffs, directional, loop-cone phenomenon, midlatitudes  
(Cooke, D. J., *et al.*) 31 5961
- Geomagnetic cutoffs, solar protons  
(Flindt, Herbert R.) 1 39
- Intensity, diurnal anisotropy [l]  
(Kane, R. P.) 22 4350
- Ionization, polar regions  
(George, Michael J.) 16 3154
- Low energy, latitude profiles [br]  
(McDiarmid, I. B., *et al.*) 19 3910
- Magnetic tail  
(Lanzerotti, L. J., *et al.*) 19 3729
- Solar protons, low energy, low latitudes  
(Bewick, A., *et al.*) 25 4605
- Solar protons, sudden commencements  
(Paulikas, G. A., *et al.*) 4 734
- Threshold rigidity, magnetic storms [br]  
(Wolfson, C. J., *et al.*) 28 5553
- Variations, density gradient, ecliptic plane [l]  
(Swinson, Derek B.) 34 7303
- Electric fields*
- Antenna impedance, VLF  
(Koons, H. C., *et al.*) 13 2490
- Convection, protons, model  
(Chen, A. J.) 13 2458
- Dynamo region, ionosphere  
(Matsushita, S., *et al.*) 28 5433
- Electrons, radial diffusion  
(Lanzerotti, L. J., *et al.*) 28 5351
- Electrostatic waves, particles, acceleration [br]  
(Swift, Daniel W.) 31 6324
- Magnetic tail, "open" topology  
(Van Allen, James A.) 1 29
- Magnetic tail, lunar particle shadows [l]  
(Anderson, K. A.) 13 2591
- Polar substorms, model  
(Bonnevier, Björn, *et al.*) 1 107
- Trapped particles [l]  
(Roederer, Juan G., *et al.*) 19 3923
- Virial theorem, trapped particles  
(Siscoe, G. L.) 28 5340
- VLF, OGO 5  
(Kennel, C. F., *et al.*) 31 6136
- General*
- Starfish nuclear explosion, trapped protons  
(Cladis, J. B., *et al.*) 1 57
- Instruments*
- Proton spectrometer  
(Stevens, John R., *et al.*) 28 5373
- Satellite sheath structure, ion measurements  
(Parker, L. W., *et al.*) 25 4720
- VLF electric field antenna, impedance, plasma density  
(Koons, H. C., *et al.*) 13 2490
- Wave polarization, whistlers, OGO 6 [br]  
(Smith, R. L.) 34 7261
- Magnetic storms*
- Chorus, midlatitude  
(Allcock, G. McK., *et al.*) 13 2503
- Configuration, solar wind, Explorer 26  
(Cahill, Laurence J., Jr.) 19 3778

- Cosmic rays, threshold rigidity [br]  
 (Wolfson, C. J., *et al.*) 28 5553
- Coupling flux, ionosphere, protonosphere  
 (Park, C. G.) 22 4249
- Electron temperatures  
 (Evans, J. V.) 25 4815
- Hydrogen, atomic, large fluxes, 800 km  
 [I]  
 (Wax, R. L., *et al.*) 31 6390
- Ionospheric temperatures, midlatitude  
 (Evans, J. V.) 25 4803
- Main phases, ring currents, plasmopause  
 (Cole, K. D.) 22 4216
- Plasma instabilities [I]  
 (Barfield, Joseph N., *et al.*) 10 1943
- Plasmopause, [br]  
 (Grebowsky, J. M.) 22 4329
- Plasmasphere, bulge  
 (Carpenter, D. L.) 19 3837
- Plasmasphere, bulge, morphology  
 (Chappell, C. R., *et al.*) 19 3848
- Proton energy spectra  
 (Stevens, John R., *et al.*) 28 5373
- Proton intensities  
 (Frank, L. A.) 7 1263
- Protons, intensity contours, trapped  
 particles  
 (Frank, L. A., *et al.*) 7 1269
- Protons, low energy, solar wind  
 (Frank, L. A.) 4 707
- Radiation zone, October 1963, December  
 1968  
 (Bostrom, C. O., *et al.*) 7 1246
- Solar radio centers, M-regions  
 (Lapointe, S. M., *et al.*) 34 6991
- Spherical harmonic analysis, September  
 1958  
 (Anderssen, R. S., *et al.*) 13 2569
- Substorms, cold plasma injection [I]  
 (Brice, Neil.) 25 4890
- Substorms, expansion phase [I]  
 (McPherron, Robert L., *et al.*) 19 3927
- Substorms, magnetic tail, configuration  
 (Fairfield, D. H., *et al.*) 34 7032
- Substorms, magnetopause  
 (Aubry, Michel P., *et al.*) 34 7018
- Substorms, model  
 (Bonnevier, Björn, *et al.*) 1 107
- Substorms, neutral sheet, electron event,  
 Vela 3A, Imp 3 [I]  
 (Akasofu, S. I., *et al.*) 34 7296
- Substorms, particle precipitation,  
 electrons [I]  
 (Rosen, L. H., *et al.*) 28 5576
- Substorms, particles, low-energy,  
 synchronous altitude, ATS 5  
 (Sharp, R. D., *et al.*) 31 6092
- Substorms, polar, current system [br]  
 (Rostoker, G., *et al.*) 31 6318
- Substorms, solar protons, low energy  
 (Bewick, A., *et al.*) 25 4605
- Substorms, third phase [I]  
 (McPherron, Robert L.) 28 5592
- Sudden commencements, particle  
 precipitation, electron  
 (Leinbach, H., *et al.*) 34 7099
- Sudden impulses, ATS 1 [br]  
 (Patel, V. L., *et al.*) 34 7255
- Topside ionosphere [br]  
 (Lakshmi, D. R., *et al.*) 22 4335
- Trapped particles, electrons, radial  
 diffusion  
 (Lanzerotti, L. J., *et al.*) 28 5351
- Trapped particles, plasma sheet,  
 plasmasphere  
 (Schield, M. A., *et al.*) 28 5401
- Trapped particles, ring currents  
 (Cornwall, John M., *et al.*) 25 4699
- Virial theorem  
 (Siscoe, G. L.) 28 5340
- Magnetic tail*  
 Auroral substorms, electrons, accelerations  
 (Lezniak, T. W., *et al.*) 34 7075
- Configuration, substorms  
 (Fairfield, D. H., *et al.*) 34 7032
- Cosmic rays  
 (Lanzerotti, L. J., *et al.*) 19 3729
- Distant, electric fields, "open" topology  
 (Van Allen, James A.) 1 29
- Electric fields, lunar particle shadows [I]  
 (Anderson, K. A.) 13 2591
- Electric fields, Pioneer 8  
 (Sarf, F. L., *et al.*) 16 3167
- Electron event, electrojet, auroral, Vela  
 3A, Imp 3 [I]  
 (Meng, C. I., *et al.*) 34 7294
- Electrons, sudden enhancement, auroral  
 substorms  
 (Hones, E. W., Jr., *et al.*) 34 7060
- Geometry, Explorer 35  
 (Behannon, Kenneth W.) 4 743
- Hydromagnetic oscillations  
 (McKenzie, J. F.) 28 5331
- Magnetic wake, 500 R<sub>E</sub>  
 (Siscoe, G. L., *et al.*) 28 5319
- Model, observations, ATS 1  
 (Olson, W. P., *et al.*) 34 7117
- Neutral line, location [I]  
 (Dessler, A. J., *et al.*) 34 7323
- Neutral sheet, currents, variations, Sq  
 (Olson, W. P.) 34 7244
- Neutral sheet, plasma expansion, electron  
 event, substorms, Vela 3A, Imp 3 [I]  
 (Akasofu, S. I., *et al.*) 34 7296



- Particles, solar flares, diffusion  
 (Michel, F. C., *et al.*) 31 6061  
 Proton bursts, Explorer 35  
 (Fennell, Joseph F.) 34 7048  
 Transverse structure  
 (Hruška, A., *et al.*) 13 2449  
 Trapped particles, electrons, plasmasphere,  
 plasma sheet  
 (Schield, M. A., *et al.*) 28 5401
- Magnetopause*
- Currents, variations, Sq  
 (Olson, W. P.) 34 7244  
 Electrons, IMP 3  
 (Meng, C. I., *et al.*) 10 1827  
 Kelvin-Helmholtz instability, magnetic  
 activity, semiannual variation,  
 (Boller, Bruce R., *et al.*) 31 6073  
 Location, solar maximum, 1969, Heos 1  
 (Egidi, A., *et al.*) 34 6999  
 Mariner 5  
 (Smith, Edward J., *et al.*) 7 1233  
 Model, equilibrium  
 (Karlson, Erik T.) 13 2438  
 Model, observations, ATS 1  
 (Olson, W. P., *et al.*) 34 7117  
 Position, substorms  
 (Aubry, Michel P., *et al.*) 34 7018  
 Substorms, polar [br]  
 (Meng, C. I.) 16 3252
- Magnetosheath*
- Hydromagnetic waves, large amplitude  
 (Kaufmann, Richard L., *et al.*) 25 4666  
 Magnetic field fluctuations, Imp 4  
 (Fairfield, Donald H., *et al.*) 31 6050  
 Magnetic field fluctuations, Pioneer 7,  
 Pioneer 8  
 (Mariani, F., *et al.*) 31 6037  
 Mariner 5  
 (Smith, Edward J., *et al.*) 7 1233  
 Plasma measurements, Pioneer 6  
 (Howe, Herbert C., Jr.) 13 2429  
 Proton fluxes, spectrometer, OGO 5  
 (Ossakow, S. L., *et al.*) 31 6024  
 Solar wind plasma, bow shock  
 (Montgomery, Michael D., *et al.*) 7 1217
- Plasma instabilities*
- Parametric amplification, frequency  
 mixing  
 (Harker, K. J., *et al.*) 28 5459  
 Perpendicular fast shocks, turbulent  
 structure  
 (Coroniti, F. V.) 34 7007  
 Plasmopause, model [br]  
 (Grebowsky, J. M.) 22 4329  
 Plasmopause, OGO 3  
 (Taylor, H. A., *et al.*) 13 2481
- Proton bursts, magnetic tail, Explorer 35  
 (Fennell, Joseph F.) 34 7048  
 Protons, suprathermal, upstream, bow  
 shock, waves, large-amplitude [I]  
 (Scarf, F. L., *et al.*) 34 7316  
 Ring currents, particle precipitation  
 (Liu, Chuan Sheng.) 19 3789  
 Starfish nuclear explosion  
 (Cladis, J. B., *et al.*) 1 57  
 Striations  
 (Linson, Lewis M., *et al.*) 16 3211  
 Substorms, expansion phase [I]  
 (McPherron, Robert L., *et al.*) 19 3927  
 Trapped particles, electrons, whistlers  
 (Parks, George K.) 19 3802  
 Turbulence, electrostatic, Bow shock  
 waves, OGO 5  
 (Fredricks, R. W., *et al.*) 19 3751  
 Whistlers, amplification  
 (Lee, J. C., *et al.*) 1 85
- Plasma motion*
- Auroral arcs  
 (Atkinson, G.) 25 4746  
 Cold plasma injection, particle  
 precipitation [I]  
 (Brice, Neil.) 25 4890  
 Convection, electric fields, protons, model  
 (Chen, A. J.) 13 2458  
 Convection, electrons, accelerations  
 (Lezniak, T. W., *et al.*) 34 7075  
 Convection, electrons, whistlers  
 (Park, C. G., *et al.*) 19 3825  
 Convection, ionospheric conductivity  
 (Wolf, R. A.) 25 4677  
 Convection, particles, low-energy, ATS 5  
 (Sharp, R. D., *et al.*) 31 6092  
 Diffuse plasma resonances  
 (Oya, Hiroshi.) 22 4279  
 Dynamo region, electric fields, ionosphere  
 (Matsushita, S., *et al.*) 28 5433  
 Electron-wake measurements, Explorer 8,  
 Ariel 1  
 (Samir, Uri.) 4 855  
 Photoelectrons  
 (Rao, B. C. Narasinga, *et al.*) 4 816  
 Plasma temperatures  
 (Sanatani, S., *et al.*) 4 769  
 Protonosphere, ionosphere, coupling flux  
 (Park, C. G.) 22 4249
- Plasmopause*
- Ion densities, temperatures, OGO 5  
 (Serbu, G. P., *et al.*) 31 6102  
 Magnetic storms, main phase  
 (Cole, K. D.) 22 4216  
 Magnetic storms, OGO 5  
 (Chappell, C. R., *et al.*) 1 50

- Movements, ionospheric trough, OGO 5  
[I]  
(Rycroft, Michael J., *et al.*) 28 5600
- Observations, OGO 5 [br]  
(Harris, K. K., *et al.*) 1 219
- Plasma instabilities, OGO 3  
(Taylor, H. A., *et al.*) 13 2481
- Protons, eddy diffusion, ring currents  
(Cornwall, John M., *et al.*) 25 4699
- Plasmasphere*
- Bulge, morphology  
(Chappell, C. R., *et al.*) 19 3848
- Bulge, whistlers  
(Carpenter, D. L.) 19 3837
- Ion densities, temperatures, OGO 5  
(Serbu, G. P., *et al.*) 31 6102
- Whistlers, electron densities  
(Park, C. G., *et al.*) 19 3825
- Techniques*
- Conjugate mirror locations, world  
contours [br]  
(Barish, Franklin D., *et al.*) 31 6342
- Trapped particles*
- Artificial injection  
(Manson, D. J., *et al.*) 25 4710
- Charged particle albedo  
(König, P. J., *et al.*) 7 1172
- Cold plasma injection [I]  
(Brice, Neil.) 25 4890
- Conjugate mirror locations, world  
contours [br]  
(Barish, Franklin D., *et al.*) 31 6342
- Cosmic rays, diurnal variations  
(Jenkins, Robert W., *et al.*) 10 1802
- Electric fields [I]  
(Roederer, Juan G., *et al.*) 19 3923
- Electrons, Injun 4  
(Craven, J. D.) 13 2468
- Electrons  
(Imhof, W. L., *et al.*) 4 776
- Electrons, accelerations  
(Parks, George K.) 19 3802
- Electrons, plasma sheet, plasmasphere  
(Schield, M. A., *et al.*) 28 5401
- Electrons, radial diffusion  
(Lanzerotti, L. J., *et al.*) 28 5351
- Electrons, substorms [I]  
(Rosen, L. H., *et al.*) 28 5576
- Electrons, 40 kev, boundary region, Injun  
3  
(Fritz, Theodore A.) 28 5387
- Electrostatic waves, ring currents, particle  
acceleration [I]  
(Laval, G., *et al.*) 16 3255
- Gyrophase coherence [br]  
(Cornwall, John M., *et al.*) 22 4339
- Magnetic storms  
(Bostrom, C. O., *et al.*) 7 1246
- Nuclei, carbon, oxygen, nitrogen, outer  
radiation zone, Injun 5  
(Van Allen, James A., *et al.*) 31 6085
- Outer radiation zone, Injun 5  
(Krimigis, S. M., *et al.*) 22 4210
- Photoelectrons, escape flux, midlatitudes  
[I]  
(Heikkila, W. J.) 25 4877
- Photoelectrons, processes, conjugate  
phenomena  
(Nagy, A. F., *et al.*) 31 6260
- Protons, energy spectra  
(Stevens, John R., *et al.*) 28 5373
- Protons, intensity contours  
(Frank, L. A., *et al.*) 7 1269
- Protons, low energy  
(Frank, L. A.) 4 707
- Protons, SND  
(Claflin, E. Scott, *et al.*) 7 1257
- Protons, Starfish nuclear explosion  
(Cladis, J. B., *et al.*) 1 57
- Protons, time variations [br]  
(Macy, William W., *et al.*) 22 4322
- Ring currents, magnetic storms  
(Lackner, K.) 16 3180
- Virial theorem, electric fields  
(Siscoe, G. L.) 28 5340
- VLF, pitch-angle scattering  
(Gendrin, R., *et al.*) 31 6169
- Variations*
- Field-aligned currents, auroral oval  
(Armstrong, J. C., *et al.*) 34 7122
- Geomagnetic index, real time [I]  
(Joselyn, Jo Ann.) 14 2777
- Kp index, thermosphere, temperature, [br]  
(Jacchia, Luigi G.) 22 4347
- Magnetic activity, semiannual,  
Kelvin-Helmholtz instability  
(Boller, Bruce R., *et al.*) 31 6073
- Micropulsations, aurora, emissions,  
nitrogen, conjugate phenomena  
(Campbell, W. H.) 31 6182
- Micropulsations, cosmic rays  
(Dhanju, M. S., *et al.*) 10 1795
- Micropulsations, HF wave turbulence,  
electron precipitation  
(Coroniti, F. V., *et al.*) 7 1279
- Micropulsations, LF noise  
(Dunckel, N., *et al.*) 10 1854
- Micropulsations, magnetic tail  
(Hruška, A., *et al.*) 13 2449
- Micropulsations, Pc 1, sunspots  
(Fraser-Smith, A. C.) 25 4735
- Micropulsations, polarizations  
(Rankin, D., *et al.*) 28 5444
- Solar eclipse, November 1965  
(van der Laan, Jan E.) 7 1312

- Sq, currents, magnetopause, ring, neutral sheet  
(Olson, W. P.) 34 7244
- Sudden impulses, ATS 1 [br]  
(Patel, V. L., *et al.*) 34 7255
- Transverse disturbances, 1100 km  
(Zmuda, A. J., *et al.*) 25 4757
- Wave phenomena, plasma instabilities [I]  
(Barfield, Joseph N., *et al.*) 10 1943
- Wave propagation**
- Diffuse plasma resonances  
(Oya, Hiroshi.) 22 4279
- ELF, Alfén velocity, OGO 5 [I]  
(Burton, Rande K., *et al.*) 28 5582
- ELF, apparent attenuation  
(Hughes, H. G., *et al.*) 15 2795
- ELF emissions, OV3 3 [br]  
(McPherson, D. A., *et al.*) 28 5559
- ELF noise, outer plasmasphere, OGO 3  
(Russell, Christopher T., *et al.*) 4 755
- Field-aligned irregularities, F-region  
(Baggaley, W. J.) 1 152
- HF backscatter echoes, F-region  
(Bates, Howard F., *et al.*) 1 165
- Hydromagnetic, configuration  
(Jenkins, Alvin W., Jr.) 19 3817
- Inhomogeneous plasma  
(Fejer, J. A., *et al.*) 10 1919
- Ion cyclotron, nonpotential  
(Stéfant, Robert J.) 34 7182
- LF noise, micropulsations  
(Dunckel, N., *et al.*) 10 1854
- Parametric amplification, frequency mixing  
(Harker, K. J., *et al.*) 28 5459
- Plasma frequency resonance, cyclotron frequency  
(McAfee, J. R.) 22 4287
- Topside sounders, oblique echoes, upper hybrid resonance  
(Graff, Philippe.) 34 7193
- VLF duct, model  
(Gross, S. H.) 22 4235
- VLF, electric fields  
(Kennel, C. F., *et al.*) 31 6136
- VLF, particles, pitch-angle scattering  
(Gendrin, R., *et al.*) 31 6169
- Whistlers**
- Amplification, plasma instabilities  
(Lee, J. C., *et al.*) 1 85
- Duct properties, VLF, OGO 3, magnetic equator  
(Angerami, Jacyntho J.) 31 6115
- ELF emissions, plasmopause, OV3 3 [br]  
(McPherson, D. A., *et al.*) 28 5559
- Hydromagnetic, plasma densities  
(Higuchi, Y., *et al.*) 34 7105
- Ion cyclotron, Injun 5 [I]  
(Gurnett, Donald A., *et al.*) 7 1342
- Particle precipitation, electron  
(Parks, George K.) 19 3802
- Plasmopause, magnetic storms  
(Chappell, C. R., *et al.*) 1 50
- Plasmasphere, electron density irregularities  
(Park, C. G., *et al.*) 19 3825
- Proton, ion cyclotron waves  
(Stéfant, Robert J.) 34 7182
- Proton, polarization [br]  
(Smith, R. L.) 34 7261
- Protonosphere, ionosphere, coupling flux  
(Park, C. G.) 22 4249
- Sudden commencements, plasmasphere  
(McNeill, F. A.) 22 4230
- VLF, magnetic storms  
(Allcock, G. McK., *et al.*) 13 2503
- VLF signals, wave propagation  
(Scarabucci, R. R.) 1 69
- Magnetotelluric surveys**
- United States*
- Wisconsin arch  
(Dowling, Forrest L.) 14 2683
- Major-element analyses**
- Basalts*
- Atlantic Ocean, Pacific Ocean  
(Kay, R., *et al.*) 8 1585
- Spherules*
- Black, atmosphere  
(Vittori, A., O.) 2 371
- Pacific Ocean, clays  
(Millard, H. T., Jr., *et al.*) 11 2125
- Mantle**
- Composition*
- Lead, isotopic, Tristan da Cunha island  
(Oversby, Virginia M., *et al.*) 11 2097
- Water, titanoclinohumite  
(McGetchin, T. R., *et al.*) 2 255
- Experimental studies*
- Olivine, iron/magnesium ratios, elastic waves, velocities, discontinuities  
(Chung, D. H.) 35 7353
- Models*
- Regional, Monte Carlo inversion  
(Press, Frank.) 32 6575
- Physical properties*
- Seismic velocity data, densities, composition, iron  
(Wang, Chi-yuen.) 17 3264
- Processes*
- Conductivity, radiative heat  
(Shankland, T. J.) 2 409
- Convection, nonlinear effects [I]  
(Rice, Alan.) 2 491
- Convection, variable viscosity  
(Takeuchi, H., *et al.*) 5 921



- Phase changes, vertical tectonics, crust  
(Magnitsky, V. A., *et al.*) 5 877
- Water, degassing rate, Venus, Earth [br]  
(Walker, J. C. G., *et al.*) 18 3558
- Structure**
- Discontinuities  
(Whitcomb, James H., *et al.*) 29 5713
- New Zealand  
(Hatherton, Trevor.) 2 269
- New Zealand, North Island, seismic surveys  
(Mooney, Harold M.) 2 285
- P-waves, traveltimes, velocity increase, Gulf of Mexico  
(Hales, A. L., *et al.*) 35 7362
- Theoretical studies**
- Heterogeneities, boundary, core [d]  
(Hide, Raymond.) 11 2141
- Volume, extrapolation formula, solids  
(Fritz, T. C., *et al.*) 8 1557
- Marine geology**
- Bottom features**
- Atlantic Ocean, north, Blake outer ridge, hydrodynamic model  
(Bryan, George M.) 24 4530
- Atlantic Ocean, north, Blake-Bahama outer ridge  
(Markl, R. G., *et al.*) 24 4539
- Mechanism, turbulence [br]  
(Karcz, Iaakov.) 15 2869
- Rift zones, fracture zones, mid-ocean ridges  
(Sleep, Norman H., *et al.*) 14 2748
- Evolution**
- Island arcs, Pacific Ocean, Tonga-Kermadec system  
(Karig, Daniel E.) 2 239
- Igneous rocks**
- Basalt, titanomagnetite, magnetic properties  
(Ozima, Mituko, *et al.*) 5 1003
- Basalts, geochemistry, petrology  
(Kay, R., *et al.*) 8 1585
- Sediments**
- Atlantic Ocean, north, horizon A  
(Ewing, J., *et al.*) 29 5645
- Flaser bedding, genesis, tidal currents  
(McCave, I. N.) 21 4151
- Pacific Ocean, compressional waves, velocities  
(Hamilton, Edwin L.) 23 4423
- Pacific Ocean, Coral Sea  
(Ewing, John I., *et al.*) 11 1963
- Pacific Ocean, north, airborne, clay minerals [br]  
(Ferguson, William S., *et al.*) 6 1137
- Pacific Ocean, spherules, mineral composition, chemical composition  
(Millard, H. T., Jr., *et al.*) 11 2125
- Velocities, shear waves, compressional waves, Pacific Ocean, California  
(Hamilton, E. L., *et al.*) 20 4039
- Structure**
- Atlantic Ocean, Antilles, Barbados, thrust faults, seismic reflection profiles [d]  
(Scholl, David W., *et al.*) 2 488
- Atlantic Ocean, Argentina, continental margins, basins, structure  
(Zambrano, J. J., *et al.*) 8 1363
- Island arcs, thrust faults, gravity faults  
(Malahoff, Alexander.) 11 1992
- Pacific Ocean, Coral Sea  
(Ewing, Maurice, *et al.*) 11 1953
- Theoretical studies**
- Sand beds, shear flow, low Froude number  
(Smith, J. Dungan.) 30 5928
- Mars**
- Atmosphere**
- CO<sub>2</sub>, photodissociation [l]  
(Clark, I. D., *et al.*) 34 7307
- CO<sub>3</sub> formation [l]  
(DeMore, W. B.) 25 4898
- CO<sub>3</sub> formation [r]  
(Hunten, D. M., *et al.*) 25 4900
- Composition, carbon dioxide  
(McElroy, Michael B., *et al.*) 7 1188
- Dayglow, emission processes [l]  
(McConnell, John C., *et al.*) 34 7290
- Hydrogen, water vapor, photochemistry, transport, escape  
(Hunten, D. M., *et al.*) 31 5989
- Experimental studies**
- CO<sub>2</sub>-H<sub>2</sub>O frosts, spectral reflectance  
(Kieffer, Hugh.) 3 501
- Thermal conductivity, density, basalt, particulate [br]  
(Fountain, James A., *et al.*) 20 4063
- Surface**
- Polar caps, CO<sub>2</sub>-H<sub>2</sub>O frosts, spectral reflectance  
(Kieffer, Hugh.) 3 510
- Surface features**
- Polar caps, frosts, goethite  
(Pollack, James B., *et al.*) 35 7480
- Polar caps, goethite, hematite, water  
(Pollack, James B., *et al.*) 35 7491
- Mediterranean region**
- Meteorology**
- Precipitation, isotopes, Levant  
(Gat, J. R., *et al.*) 15 3039
- Tectonophysics**
- Crustal structure, plate tectonics, uplift, seismicity  
(Caputo, M., *et al.*) 26 4919

**Mesozoic***California*

Coast Ranges, Franciscan mélange, Great Valley sequence  
(Ernst, W. G.) 5 886

*Continental drift*

Pangaea  
(Dietz, Robert S., *et al.*) 26 4939

**Metamorphic rocks***Pyroxene granulite facies*

Sr-87/Sr-86, petrogenesis  
(Spooner, C. M., *et al.*) 32 6706

**Meteorites***Absolute age*

Feldspar, Al<sup>26</sup>, Mg<sup>26</sup>  
(Clarke, W. B., *et al.*) 2 448  
Sr/Rb, carbonaceous chondrites  
(Kaushal, Sushil K., *et al.*) 2 463

*Composition*

Bruderheim, Homestead, Pueblito de Allende, electron paramagnetic resonance, nuclear magnetic resonance  
(Chatelain, A., *et al.*) 29 5681  
Gadolinium, isotopic composition  
(Eugster, O., *et al.*) 14 2753  
Iron oxides, Wolf Creek, Cumberland Falls, Clovis (No. 1), Mössbauer spectroscopy  
(Sprenkel-Segel, E. L.) 32 6618

*Experimental studies*

Processes, ablation, [I]  
(Baldwin, Barrett, *et al.*) 2 495

*Genesis*

Gibeon, iron, mechanical properties  
(Gordon, Robert B.) 2 439

*Isotopes*

Allende, Sprucefield, Alandroal, cosmic rays  
(Fireman, E. L., *et al.*) 11 2115  
Sr/Rb, enstatite chondrites  
(Gopalan, K., *et al.*) 17 3457  
Xenon, carbonaceous chondrites, Leoville  
(Manuel, O. K., *et al.*) 29 5693

**Meteorology***Aerosols*

Ammonium sulfate, ammonia, Great Britain  
(Healy, T. V., *et al.*) 12 2317  
Composition, chlorine, bromine, Great Lakes region  
(Loucks, Ronald H., *et al.*) 12 2311  
Composition, genesis  
(Pözl, K.) 12 2347  
Convection, 700 m, 3000 m, temperature  
(Reiter, R., *et al.*) 15 3065  
Distribution, Atlantic Ocean, Pacific region  
(Blifford, Irving H., Jr.) 15 3099

Droplets, impulse corona, positive, negative  
(Phelps, C. T., *et al.*) 24 4483  
Fallout debris  
(Nguyen Ba Cuong, *et al.*) 15 2877  
Particles, Agung dust, stratosphere, turbidity  
(Volz, Frederic E.) 27 5185  
Particles, cirrus clouds  
(Rosinski, J., *et al.*) 15 2961  
Particles, composition, Chicago, Illinois  
(Brar, S. S., *et al.*) 15 2939  
Particles, metals, USSR, Arctic regions  
(Egorov, V. V., *et al.*) 18 3650  
Particles, size distribution  
(Quenzel, H.) 15 2915  
Particles, size distribution  
(Storebø, Per B., *et al.*) 15 2931  
Particles, size distribution, altitude  
(Carnuth, W.) 15 2999  
Particles, trace-element analyses  
(Rancitelli, L. A., *et al.*) 15 3055  
Precipitation, composition, USSR  
(Petrenchuk, O. P., *et al.*) 18 3629  
Radioactive tracers, precipitation, Hadley cell  
(Bhandari, N., *et al.*) 15 2974  
Residence time, radioactive tracers, USSR  
(Leipunskiy, O. I., *et al.*) 18 3569  
Stratosphere, radioactive tracers  
(Karol, I. L.) 18 3589  
Sulfates  
(Georgii, Hans Walter.) 12 2365  
Techniques, membrane filter, transparency  
(Anýž, F.) 12 2299  
Troposphere, stratosphere  
(Schuster, Burton G.) 15 3123  
Troposphere, USSR  
(Nazarov, L. E., *et al.*) 18 3575  
Turbidity, stratosphere  
(Volz, F. E.) 9 1641  
Turbidity, stratosphere [c]  
(Volz, F. E.) 27 5296  
*Boundary interactions*  
Carbon dioxide, carbon cycle  
(Walton, A., *et al.*) 15 3089  
CO<sub>2</sub>, C<sup>14</sup>, residence time  
(Nydal, Reidar, *et al.*) 12 2271  
CO<sub>2</sub>, C<sup>14</sup>, tritium  
(Suess, H. E.) 12 2363  
Deposition, water surfaces  
(Möller, U., *et al.*) 15 3013  
Evaporation, ocean, particles, organic [br]  
(Barger, W. R., *et al.*) 24 4561  
Fallout debris, concentration, Sr<sup>90</sup>  
(Machta, L., *et al.*) 6 1092  
Fallout debris, concentrations, Sr<sup>90</sup>  
(Volchok, H. L., *et al.*) 6 1084

- Fallout debris, geographic distribution  
(Nguyen Ba Cuong, *et al.*) 15 2877
- Mediterranean region, Levant,  
precipitation  
(Gat, J. R., *et al.*) 15 3039
- Oxygen, evolution [br]  
(Broecker, Wallace S.) 18 3553
- Plume, forced, stratified fluid, model  
(Fox, Douglas G.) 33 6818
- Plutonium, concentrations, Japan, Sea of  
Japan  
(Miyake, Y., *et al.*) 12 2329
- Sea water, evaporation, hurricanes, Faith,  
1966  
(Östlund, H. Göte.) 12 2303
- Space charge, oceans, surf zone  
(Gathman, Stuart G., *et al.*) 24 4525
- Temperature, paleoclimatology, United  
States, northeastern, freshwater  
carbonates  
(Stuiver, Minze.) 27 5247
- Tritium, Crater Lake, Oregon  
(Simpson, H. James.) 27 5195
- Tropopause, aerosols, radioactive, Rn<sup>222</sup>  
(Nazarov, L. E., *et al.*) 18 3575
- Tropopause, folding, ozone, radioactivity  
(Danielsen, E., *et al.*) 12 2353
- Tropopause, isotopic tracers  
(Luyanas, V. Yu., *et al.*) 18 3665
- Tropopause, transport processes, model  
(Karol, I. L.) 18 3589
- Wind stress, air-sea interface  
(Smith, Stuart D.) 33 6758
- Wind stress, oceans, Langmuir circulation  
[br]  
(Gordon, Arnold L.) 21 4177
- Wind stress, oceans, Langmuir circulation  
[d]  
(Stewart, Ronald.) 36 7635
- Wind, turbulence, ice floes, Atlantic  
Ocean, Gulf of St. Lawrence  
(Smith, S. D., *et al.*) 15 2803
- Circulation*
- Air masses, continental, oceanic, tritium  
(Kigoshi, Kunihiro, *et al.*) 15 2981
- Fallout debris, transport processes, model  
(Krey, P. W., *et al.*) 15 2901
- Interhemispheric mixing, fallout debris,  
Indian Ocean region  
(Peirson, D. H., *et al.*) 9 1760
- Interhemispheric mixing, fallout debris,  
Indian Ocean, west  
(Dmitriyeva, G. V., *et al.*) 18 3675
- Interhemispheric mixing, Indian Ocean,  
monsoons  
(Rangarajan, C., *et al.*) 9 1753
- Mechanism, ozone distribution  
(Dütsch, H. U.) 9 1707
- Mediterranean region, Levant,  
precipitation, isotopes  
(Gat, J. R., *et al.*) 15 3039
- Meridional, Kr<sup>85</sup>  
(Pannetier, R.) 15 2985
- Meridional transport, ozone, southern  
hemisphere [br]  
(Kulkarni, R. N., *et al.*) 21 4174
- Model, radon  
(Huss, A., *et al.*) 15 3020
- Model, rotating system, hydraulic jumps  
(Williams, R. T., *et al.*) 15 2813
- Monsoon air mass, continental  
component, Indian Ocean  
(Rama.) 12 2227
- Periodicity, radon, low altitude  
(Lambert, Gérard, *et al.*) 12 2341
- Polar vortex, breakdown, transport  
processes, stratosphere  
(Mahlman, J. D.) 9 1701
- Stratosphere, eddy diffusion, tracer  
materials  
(Machta, Lester, *et al.*) 12 2279
- Stratosphere, stratopause, Be<sup>7</sup>, Cd<sup>109</sup>, Pu<sup>238</sup>  
(Bhandari, Narendra.) 15 2927
- Thermosphere, solar radiation [br]  
(Hicks, J. E., *et al.*) 28 5565
- Tropopause, ozone, radioactivity  
(Danielsen, E., *et al.*) 12 2353
- Winds, equatorial, stratosphere  
(Belmont, A. D., *et al.*) 15 3133
- Winds, zonal, above 200 km [br]  
(Bedinger, J. F.) 3 683
- Zonal, Sr<sup>90</sup>, seasonal variations  
(Ehhalt, D. H., *et al.*) 15 3027
- Zonal winds, northern hemisphere  
(Angell, J. K., *et al.*) 3 543
- Composition*
- Aitken nuclei, geochemistry  
(Vohra, K. G., *et al.*) 15 2951
- Ammonia, aerosols, ammonium sulfate,  
Great Britain  
(Healy, T. V., *et al.*) 12 2317
- C<sup>14</sup>, CO<sub>2</sub>  
(Nydal, Reidar, *et al.*) 12 2271
- Carbon dioxide, carbon cycle, C<sup>14</sup>  
(Walton, A., *et al.*) 15 3089
- Carbon monoxide, global distribution  
(Seiler, W., *et al.*) 12 2217
- Isotopes, Ar<sup>37</sup>, Ar<sup>39</sup>, Kr<sup>81</sup>, cosmic rays  
(Loosli, H. H., *et al.*) 15 2895
- Isotopes, O<sup>18</sup>, CO<sub>2</sub>, HASL data, humidity  
(Craig, H., *et al.*) 9 1723
- Isotopes, precipitation, Mediterranean  
region  
(Gat, J. R., *et al.*) 15 3039



- Isotopes, seasonal variations, Rn<sup>222</sup>, Ra<sup>226</sup>,  
Pb<sup>210</sup>, Po<sup>210</sup>, Finland  
(Mattsson, Rolf.) 9 1741
- Minor constituents, CH<sub>4</sub>, CO<sub>2</sub>, H<sub>2</sub>O, O<sub>3</sub>  
(Conrath, B. J., *et al.*) 30 5831
- Nitrous oxide, Germany, Mainz  
(Schütz, K., *et al.*) 12 2230
- Nitrous oxide, Panama, Barbados island,  
Atlantic Ocean  
(LaHue, Miles D., *et al.*) 15 2922
- Noble gases, 43 km, 63 km  
(Bieri, R. H., *et al.*) 33 6731
- O<sub>2</sub>( $\Delta g$ ), hydrogen, nitrogen [l]  
(Brown, Robert L.) 19 3935
- Oxygen, evolution [br]  
(Broecker, Wallace S.) 18 3553
- Oxygen, nitrogen, carbon dioxide, ratios  
(Schwiesow, R. L., *et al.*) 9 1629
- Oxygen, nitrogen, carbon dioxide, ratios  
[d]  
(Bischof, Walter.) 30 5960
- Oxygen, nitrogen, carbon dioxide, ratios  
[r]  
(Schwiesow, Ronald L.) 30 5961
- Oxygen, polluted environment  
(Kummler, Ralph H., *et al.*) 15 3115
- Ozone, meridional transport, southern  
hemisphere [br]  
(Kulkarni, R. N., *et al.*) 21 4174
- Ozone, stratosphere  
(Dütsch, H. U.) 9 1707
- Ozone, subpolar region, winter  
stratosphere  
(Randhawa, J. S.) 9 1693
- Radionuclides, Cl<sup>38</sup>, Cl<sup>39</sup>, Na<sup>24</sup>, cosmic  
rays, production rates  
(Young, J. A., *et al.*) 12 2385
- Radon, Indian Ocean, monsoon air mass  
(Rama.) 12 2227
- Radon, mass continuity equation [d]  
(Staley, D. O.) 27 5293
- Radon, mass continuity equation [r]  
(Wilkening, Marvin H.) 27 5295
- Rn<sup>220</sup>, diurnal variations  
(Guedalia, Daniel, *et al.*) 2 357
- Rn<sup>222</sup> concentrations, mountain  
environments  
(Wilkening, Marvin H.) 9 1733
- Rn<sup>222</sup>, Illinois  
(Bradley, Wayne E., *et al.*) 30 5890
- Rn<sup>222</sup>, jet stream, USSR  
(Nazarov, L. E., *et al.*) 18 3575
- Rn<sup>222</sup>, USSR  
(Kirichenko, L. V.) 18 3639
- Stratopause, hydrogen, methane, water  
vapor  
(Scholz, T. G., *et al.*) 15 3049
- Sulfur  
(Georgii, Hans Walter.) 12 2365
- Sulfur dioxide, residence time  
(Weber, Erich.) 15 2909
- Troposphere, theoretical reaction schemes,  
negative ions  
(Mohnen, V. A.) 9 1717
- Convection*  
Aerosols, 700 m, 3000 m, temperature  
(Reiter, R., *et al.*) 15 3065
- Dust devils, New Mexico [br]  
(Crozier, W. D.) 24 4583
- Dust devils, rotation  
(Carroll, J. J., *et al.*) 27 5179
- Dust devils, wind velocities  
(Ryan, J. A., *et al.*) 3 531
- Model, radon  
(Huss, A., *et al.*) 15 3020
- Na<sup>24</sup>, concentrations, altitude dependence  
(Roedel, Walter.) 15 3033
- Radon, mass continuity equation [d]  
(Staley, D. O.) 27 5293
- Radon, mass continuity equation [r]  
(Wilkening, Marvin H.) 27 5295
- Rn<sup>222</sup> concentrations, mountain  
environments  
(Wilkening, Marvin H.) 9 1733
- Vertical distribution, ozone, southern  
hemisphere [br]  
(Kulkarni, R. N., *et al.*) 21 4174
- Diffusion*  
Brownian, anisotropic, precipitation,  
particles, aerosol  
(Slinn, W. G. N., *et al.*) 12 2267
- Dust, volcanic  
(Dyer, A. J.) 15 3007
- Eddy, radon profiles [d]  
(Lettau, H.) 15 2849
- Eddy, radon profiles [r]  
(Hosler, C. R.) 15 2851
- Eddy, wash-out  
(Bakulin, V. N., *et al.*) 18 3669
- Eddy, evaporation, lateral diffusion  
(Yeh, Gour-Tsyh, *et al.*) 27 5173
- Eddy, gravity waves, internal [l]  
(Hines, C. O.) 19 3937
- Eddy, hydroxyl emission, model  
(Hessvedt, Eigil.) 12 2337
- Eddy, isotopes [br]  
(Beran, M., *et al.*) 27 5279
- Eddy, mass transport, thoron, radon  
(Israël, H., *et al.*) 12 2291
- Eddy, particles, deposition  
(Sehmel, G. A.) 9 1766
- Eddy, stratosphere, tracer materials  
(Machta, Lester, *et al.*) 12 2279
- Eddy, tracers  
(Berlyand, M. E., *et al.*) 18 3657

- Eddy, transport processes, Pb<sup>210</sup>, stratosphere  
(Feely, Herbert W., *et al.*) 15 2885
- Method, turbulent transport, ozone flux, ozone gradient [d]  
(Deardorff, James W.) 21 4184
- Method, turbulent transport, ozone flux, ozone gradient [d]  
(Mantis, H. T.) 21 4187
- Method, turbulent transport, ozone flux, ozone gradient [r]  
(Regener, Victor H.) 21 4188
- Method, turbulent transport, ozone flux, ozone gradient [c]  
(Regener, Victor H.) 33 6884
- Model, large-scale, eddy diffusion  
(Kao, S. K., *et al.*) 15 3104
- Particles, passive, Lagrangian turbulence  
(Byzova, N. L., *et al.*) 18 3605
- Radioactive tracers, residence time, models  
(Bhandari, N., *et al.*) 15 2974
- Rn<sup>220</sup>  
(Guedalia, Daniel, *et al.*) 2 357
- Rn<sup>222</sup>, Illinois  
(Bradley, Wayne E., *et al.*) 30 5890
- Rn<sup>222</sup>, model  
(Biro, A., *et al.*) 12 2373
- Electrical phenomena*
- Charges, snow  
(Burrows, D. A., *et al.*) 24 4499
- Corona, impulse, droplets, aerosols  
(Phelps, C. T., *et al.*) 24 4483
- Currents, corona point, wind  
(Chapman, Seville.) 12 2165
- Droplets, charge, size, thunderstorms  
(Colgate, Stirling A., *et al.*) 30 5873
- Dust devils, New Mexico [br]  
(Crozier, W. D.) 24 4583
- Experimental studies, corona, spark discharge, positively stressed electrode  
(Anderson, F. J., *et al.*) 36 7531
- Lightning, channel geometry, thunder  
(Few, A. A.) 36 7517
- Lightning, current measurements, Arizona  
(Shaw, Glenn E.) 12 2159
- Lightning, dart leader, interstroke time interval  
(Rao, Manoranjan.) 30 5868
- Lightning, model  
(Dawson, G. A., *et al.*) 30 5858
- Lightning, pressure pulse, numerical analysis [d]  
(Few, A. A., *et al.*) 21 4192
- Lightning, pressure pulse, numerical analysis [r]  
(Troutman, W. W.) 21 4196
- Lightning, return stroke, current, magnetic field, radiation field  
(Uman, Martin A., *et al.*) 27 5143
- Lightning, spectral intensities  
(Barasch, Guy E.) 6 1049
- Lightning, stepped leader, radiation field, current  
(Uman, Martin A., *et al.*) 6 1058
- Lightning, UHF radiation  
(Kosarev, E. L., *et al.*) 36 7524
- Raindrops, charge, mass  
(Latham, J., *et al.*) 3 515
- Raindrops, charge, mass [d]  
(Phelps, C. T.) 24 4587
- Raindrops, charge, mass [d]  
(Dawson, G. A., *et al.*) 24 4589
- Raindrops, charge, mass, external electric fields. [br]  
(Dawson, G. A.) 3 701
- Raindrops, charge, mass [r]  
(Latham, J., *et al.*) 24 4593
- Raindrops, charged, microwave emission [br]  
(Keeney, Joe.) 6 1123
- Raindrops, cloud drops, hail, accretion rates, thunderstorms  
(Sartor, J. Doyne.) 36 7547
- Raindrops, collision efficiencies  
(Paluch, Ilga R.) 9 1633
- Raindrops, corona, positive, negative  
(Dawson, G. A.) 12 2153
- Raindrops, lightning strokes, mechanism  
(Loeb, Leonard B.) 30 5882
- Schumann resonances  
(Galejs, Janis.) 16 3237
- Space charge, oceans, surf zone  
(Gathman, Stuart G., *et al.*) 24 4525
- Space charge, water, Lake Superior region  
(Gathman, Stuart G., *et al.*) 6 1041
- Thunderstorms, conducting atmosphere, altitude [d]  
(Mann, James E., Jr.) 9 1697
- Thunderstorms, conducting atmosphere, altitude [r]  
(Anderson, F. J., *et al.*) 9 1699
- Thunderstorms, frequency, lunar cycle  
(Lethbridge, Mae DeVoe.) 27 5149
- Electromagnetic waves*
- Aerosols, particles, size distribution, optical methods  
(Quenzel, H.) 15 2915
- Aitken nuclei  
(Vohra, K. G., *et al.*) 15 2951
- Gamma radiation, terrestrial  
(Minato, Susumu, *et al.*) 29 5825
- Gamma rays, low energy, midlatitudes [d]  
(Chupp, E. L., *et al.*) 4 871

- Gamma rays, low energy, midlatitudes [r]  
(Haymes, R. C., *et al.*) 4 873
- Radiative cooling, temperature, water  
vapor [br]  
(London, Julius, *et al.*) 33 6862
- Refraction, troposphere, corrections,  
satellite data [l]  
(Yionoulis, S. M.) 36 7636
- Solar radiation, winds, thermosphere [br]  
(Hicks, J. E., *et al.*) 28 5565
- Ultraviolet, absorption, coefficient, CO<sub>2</sub>  
[l]  
(Heimerl, J.) 28 5574
- Experimental studies*
- Deposition, water surfaces  
(Möller, U., *et al.*) 15 3013
- Raindrops, intense external electric fields  
(Latham, J., *et al.*) 3 515
- Raindrops, intense external electric fields  
[br]  
(Dawson, G. A.) 3 701
- Raindrops, intense external electric fields  
[d]  
(PHELPS, C. T.) 24 4587
- Raindrops, intense external electric fields  
[d]  
(Dawson, G. A., *et al.*) 24 4589
- Raindrops, intense external electric fields  
[r]  
(Latham, J., *et al.*) 24 4593
- Instruments*
- Aerosols, integrating nephelometer  
(Charlson, Robert J., *et al.*) 15 3146
- Centrifugal spectrometer, aerosols  
(Redkin, J. N.) 18 3563
- Exhalation measurements, Rn<sup>220</sup>  
(Styra, B. I., *et al.*) 18 3635
- Hydrogen, continuous recording, mercuric  
oxide  
(Schmidt, U., *et al.*) 9 1713
- Ions, small-ions, concentrations,  
cylindrical capacitor  
(Jonassen, Niels.) 24 4491
- Isotopic ions, airborne measurements,  
radon, daughter ions  
(Jonassen, Niels, *et al.*) 9 1745
- Michelson interferometer, Nimbus 3  
(Conrath, B. J., *et al.*) 30 5831
- NASA's 150-meter tower, wind tunnel  
model, windspeed ratios [br]  
(Camp, Dennis W., *et al.*) 6 1117
- Optical propagation technique, turbulence,  
microscale, permittivity spectrum  
(Gray, D. A., *et al.*) 6 1077
- Pressure, temperature, density,  
composition, balloons  
(Ballard, Harold N., *et al.*) 18 3501
- Raman spectroscopy, oxygen balance  
(Schwiesow, R. L., *et al.*) 9 1629
- Raman spectroscopy, oxygen balance [d]  
(Bischof, Walter.) 30 5960
- Raman spectroscopy, oxygen balance [r]  
(Schwiesow, Ronald L.) 30 5961
- Rn<sup>220</sup>, measurement  
(Guedalia, Daniel, *et al.*) 2 357
- Thrust-anemometer, Mark VI, air-sea  
interface  
(Smith, Stuart D.) 33 6758
- Turbulent flux, airborne  
(Miyake, Mikio, *et al.*) 24 4506
- Wind sensors, anemometers, wind vanes  
[br]  
(Camp, Dennis W., *et al.*) 27 5265
- Ions*
- Aitken nuclei, formation  
(Vohra, K. G., *et al.*) 15 2951
- H<sub>3</sub>O · (H<sub>2</sub>O)<sub>n</sub>, source, D-region [l]  
(Swider, W.) 34 7299
- Hydroxyl emission, eddy diffusion, model,  
oxygen, hydrogen  
(Hessvedt, Eigil.) 12 2337
- Negative, theoretical reaction schemes,  
troposphere  
(Mohnen, V. A.) 9 1717
- Photoionization, F-region, gravity waves  
(Hooke, William H.) 34 7239
- Radon, daughter ions, concentrations,  
airborne measurements  
(Jonassen, Niels, *et al.*) 9 1745
- Silicon, ionization, Leonid meteor shower  
[c]  
(Ferguson, E. E., *et al.*) 34 7333
- Sulfates  
(Georgii, Hans Walter.) 12 2365
- Sulfur dioxide, residence time  
(Weber, Erich.) 15 2909
- Particles*
- Aerosol, Brownian motion, precipitation  
(Slinn, W. G. N., *et al.*) 12 2267
- Aerosol, composition, Chicago, Illinois  
(Brar, S. S., *et al.*) 15 2939
- Aerosol, deposition, turbulent diffusion  
(Sehmel, G. A.) 9 1766
- Aerosol, radioactivity, particle radius,  
fractionation factor  
(Peters, Wolfgang, *et al.*) 15 2991
- Aerosol, radioactivity, size distribution  
(Redkin, J. N.) 18 3563
- Aerosol, size distribution  
(Carnuth, W.) 15 2999
- Aerosol, metals, USSR, Arctic regions  
(Egorov, V. V., *et al.*) 18 3650



- Aitken nuclei  
(Vohra, K. G., *et al.*) 15 2951
- Cirrus clouds, aerosols  
(Rosinski, J., *et al.*) 15 2961
- Clouds, noctilucent  
(Farlow, Neil H., *et al.*) 33 6736
- Clouds, noctilucent, [br]  
(Frank, Evelyn R., *et al.*) 33 6853
- Clouds, noctilucent, sounding rockets [br]  
(Ferry, Guy V.) 33 6857
- Dispersion, large-scale  
(Kao, S. K., *et al.*) 15 3104
- Droplets, impulse corona, positive,  
negative  
(Phelps, C. T., *et al.*) 24 4483
- Dust, Agung volcano, stratosphere,  
turbidity  
(Volz, Frederic E.) 27 5185
- Dust, clay minerals, Pacific Ocean, north  
[br]  
(Ferguson, William S., *et al.*) 6 1137
- Dust, concentrations, Atlantic Ocean,  
north  
(Parkin, D. W., *et al.*) 9 1782
- Dust, eddy diffusion, radon, thoron  
(Israël, H., *et al.*) 12 2291
- Dust, precipitation, USSR  
(Petrenchuk, O. P., *et al.*) 18 3629
- Dust, radioactive, precipitation, model  
(Avramenko, A. S., *et al.*) 18 3613
- Dust, vertical distribution, Arizona  
(Idso, Sherwood B., *et al.*) 12 2179
- Dust, volcanic  
(Dyer, A. J.) 15 3007
- Fallout debris, Cd<sup>109</sup>, precipitation [br]  
(Ezemenari, F. R. C., *et al.*) 27 5271
- Fallout debris, geographic distribution,  
exchange rate  
(Nguyen Ba Cuong, *et al.*) 15 2877
- Fallout debris, interhemispheric mixing  
(Rangarajan, C., *et al.*) 9 1753
- Fallout debris, interhemispheric mixing,  
Indian Ocean region  
(Peirson, D. H., *et al.*) 9 1760
- Fallout debris, plutonium, Japan, Sea of  
Japan  
(Miyake, Y., *et al.*) 12 2329
- Fallout debris, size distribution, clouds,  
nuclear explosions  
(Nathans, M. W., *et al.*) 36 7559
- Fallout debris, Sr<sup>90</sup>, North America,  
Atlantic Ocean  
(Freudenthal, Peter C.) 21 4089
- Fallout debris, Sr<sup>90</sup>, precipitation,  
mid-latitudes  
(Malakhov, S. G., *et al.*) 18 3623
- Fallout debris, transport processes, box  
model  
(Krey, P. W., *et al.*) 15 2901
- Ferromagnetic, black spherules  
(Vittori A., O.) 2 371
- Marine, organic [br]  
(Barger, W. R., *et al.*) 24 4561
- Mesosphere, noctilucent dust  
(Fechtig, H., *et al.*) 33 6751
- Model, size, hyperbolic distribution  
(Bader, Henri.) 15 2822
- Passive, diffusion, Lagrangian turbulence  
(Byzova, N. L., *et al.*) 18 3605
- Radioactive tracers, Be<sup>7</sup>, Cd<sup>109</sup>, Pu<sup>238</sup>,  
transport processes  
(Bhandari, Narendra.) 15 2927
- Radioactive tracers, Pb<sup>210</sup>, transport  
processes, eddy diffusion, stratosphere  
(Feely, Herbert W., *et al.*) 15 2885
- Radioactive tracers, precipitation, Hadley  
cell  
(Bhandari, N., *et al.*) 15 2974
- Radioactive tracers, transport processes,  
tropopause  
(Luyanas, V. Yu., *et al.*) 18 3665
- Size distribution, dense aerosols  
(Storebø, Per B., *et al.*) 15 2931
- Snow, electrical charge  
(Burrows, D. A., *et al.*) 24 4499
- Transport processes, trace substances,  
polar vortex, stratosphere  
(Mahlman, J. D.) 9 1701
- Storms**
- Clouds, lightning, model  
(Dawson, G. A., *et al.*) 30 5858
- Hurricanes, Camille, bottom currents [br]  
(Murray, Stephen P.) 24 4579
- Hurricanes, Faith, 1966, deuterium  
(Ehhalt, Dieter H., *et al.*) 12 2323
- Hurricanes, Faith, 1966, sea water, tritium  
(Östlund, H. Göte.) 12 2303
- Lightning, dart leader, interstroke time  
interval  
(Rao, Manoranjan.) 30 5868
- Model, rotating system, hydraulic jumps  
(Williams, R. T., *et al.*) 15 2813
- Thunderstorms, conducting atmosphere,  
altitude [d]  
(Mann, James E., Jr.) 9 1697
- Thunderstorms, conducting atmosphere,  
altitude [r]  
(Anderson, F. J., *et al.*) 9 1699
- Thunderstorms, droplets, size, charge  
(Colgate, Stirling A., *et al.*) 30 5873
- Thunderstorms, frequency, lunar cycle  
(Lethbridge, Mae DeVoe.) 27 5149

- Thunderstorms, raindrops, cloud drops,  
accretion rates  
(Sartor, J. Doyné.) 36 7547
- Thunderstorms, raindrops, lightning  
strokes  
(Loeb, Leonard B.) 30 5882
- Techniques*
- Aerosols, membrane filter, transparency  
(Anýž, F.) 12 2299
- Aerosols, particles, size distribution,  
optical methods  
(Quenzel, H.) 15 2915
- Diffusion, model, Rn<sup>222</sup>  
(Birot, A., *et al.*) 12 2373
- Double scattering, bistatic laser radar,  
normal mode  
(Schotland, R. M., *et al.*) 36 7581
- Exhalation measurements, Rn<sup>220</sup>  
(Styra, B. I., *et al.*) 18 3635
- Exhalation measurements, Rn<sup>222</sup>  
(Kirichenko, L. V.) 18 3639
- Gridding scheme, APT satellite [d]  
(Greaves, James R., *et al.*) 6 1140
- Gridding scheme, APT satellite pictures  
[r]  
(Bonner, William D.) 12 2214
- Lightning, shock waves, cylindrical,  
numerical analysis [d]  
(Few, A. A., *et al.*) 21 4192
- Lightning, shock waves, cylindrical,  
numerical analysis [r]  
(Troutman, W. W.) 21 4196
- Nitrous oxide, concentrations  
(LaHue, Miles D., *et al.*) 15 2922
- Ozone flux [c]  
(Regener, Victor H.) 33 6884
- Ozone flux [d]  
(Mantis, H. T.) 21 4187
- Ozone flux, ground surface, turbulent  
mixing [d]  
(Deardorff, James W.) 21 4184
- Ozone flux [r]  
(Regener, Victor H.) 21 4188
- Radar, incoherent non-tracking, speeds,  
point targets  
(Atlas, David, *et al.*) 36 7588
- Radionuclides, Na<sup>24</sup>, Cl<sup>38</sup>, Cl<sup>39</sup>,  
precipitation  
(Perkins, R. W., *et al.*) 15 3076
- Raindrops, coalescence equation  
(Bleck, Rainer.) 27 5165
- Refraction, troposphere, range  
measurements, satellite data [l]  
(Yionoulis, S. M.) 36 7636
- Rn<sup>220</sup>, measurement  
(Guedalia, Daniel, *et al.*) 2 357
- Trace elements, gradient  
(Rancitelli, L. A., *et al.*) 15 3055
- Turbulence, lasers, permittivity spectrum  
(Strohbehn, J. W.) 6 1067
- Temperature*
- Inversion, Arizona, Phoenix, dust  
(Idso, Sherwood B., *et al.*) 12 2179
- Zonal, northern hemisphere  
(Angell, J. K., *et al.*) 3 543
- Theoretical studies*
- Convection, thermal, numerical methods  
(Faller, Alan J., *et al.*) 3 521
- Eddy diffusion, isotopes [br]  
(Beran, M., *et al.*) 27 5279
- Eddy diffusion, tracer distribution  
(Berlyand, M. E., *et al.*) 18 3657
- Electrical phenomena, lightning, model  
(Dawson, G. A., *et al.*) 30 5858
- Evaporation, eddy diffusion  
(Yeh, Gour-Tsyh, *et al.*) 27 5173
- Gravity waves, acoustic, shock formation  
(Einaudi, F.) 1 193
- Model, droplets, dust, radioactive  
(Avramenko, A. S., *et al.*) 18 3613
- Neutral atmosphere, ionized atmosphere,  
hydromagnetic coupling  
(Kato, S., *et al.*) 13 2540
- Turbulence*
- Atlantic Ocean, north, Gulf of St.  
Lawrence, ice floes  
(Smith, S. D., *et al.*) 15 2803
- Eddy, aerosols, stratosphere  
(Karol, I. L.) 18 3589
- Eddy diffusion  
(Kao, S. K., *et al.*) 15 3104
- Eddy diffusion, gravity waves, internal [l]  
(Hines, C. O.) 19 3937
- Eddy diffusion, hydroxyl emission, model,  
oxygen, hydrogen  
(Hessvedt, Eigil.) 12 2337
- Eddy diffusion, Na<sup>24</sup>  
(Roedel, Walter.) 15 3033
- Eddy diffusion, particles, deposition  
(Sehmel, G. A.) 9 1766
- Eddy diffusion, particles, Pb<sup>210</sup>  
stratosphere  
(Feely, Herbert W., *et al.*) 15 2885
- Eddy diffusion, radon profiles [d]  
(Lettau, H.) 15 2849
- Eddy diffusion, radon profiles [r]  
(Hosler, C. R.) 15 2851
- Eddy diffusion, stratosphere, circulation,  
tracer materials  
(Machta, Lester, *et al.*) 12 2279
- Eddy diffusion, thoron, radon, dust  
(Israël, H., *et al.*) 12 2291
- Eddy diffusion, tracers  
(Berlyand, M. E., *et al.*) 18 3657
- Eddy diffusion, wash-out  
(Bakulin, V. N., *et al.*) 18 3669

- Eddy, evaporation, lateral diffusion  
(Yeh, Góur-Tsyh, *et al.*) 27 5173
- Eddy, polar vortex, stratosphere  
(Mahlman, J. D.) 9 1701
- Method, airborne  
(Miyake, Mikio, *et al.*) 24 4506
- Method, ozone flux [c]  
(Regener, Victor H.) 33 6884
- Method, ozone flux [d]  
(Mantis, H. T.) 21 4187
- Method, ozone flux, ozone gradient, [d]  
(Deardorff, James W.) 21 4184
- Method, ozone flux [r]  
(Regener, Victor H.) 21 4188
- Microscale, permittivity spectrum  
(Gray, D. A., *et al.*) 6 1077
- Particles, passive, dispersion, statistical model  
(Byzova, N. L., *et al.*) 18 3605
- Permittivity spectrum, lasers  
(Strohbehn, J. W.) 6 1067
- Plume, forced, stratified fluid, Reynolds stresses  
(Fox, Douglas G.) 33 6818
- Radon, mass continuity equation [d]  
(Staley, D. O.) 27 5293
- Radon, mass continuity equation [r]  
(Wilkening, Marvin H.) 27 5295
- Reynolds stresses, drag coefficient, air-sea interface  
(Smith, Stuart D.) 33 6758
- Rn<sup>222</sup> concentrations, mountain environments  
(Wilkening, Marvin H.) 9 1733
- Troposphere, waves, radar  
(Gossard, E. E., *et al.*) 18 3523
- Troposphere, waves, radar [d]  
(Hines, C. O.) 30 5956
- Velocity components, standard deviation, flat arid terrain [br]  
(Adelfang, Stanley I.) 33 6864
- Vortexes, Karman trail, dissipation process  
(Wilkins, Eugene M.) 6 1033
- Water*
- Clouds, cirrus, particles, aerosols  
(Rosinski, J., *et al.*) 15 2961
- Clouds, droplets, size, charge  
(Colgate, Stirling A., *et al.*) 30 5873
- Clouds, freezing temperature, clathrates  
(Pena, Jorge, *et al.*) 15 2831
- Clouds, freezing temperature, clathrates [c]  
(Pena, Jorge, *et al.*) 27 5296
- Clouds, scavenging processes, isotopes  
(Perkins, R. W., *et al.*) 15 3076
- Deuterium, hurricanes, Faith, 1966  
(Ehhalt, Dieter H., *et al.*) 12 2323
- Droplets, dust, radioactive, model  
(Avramenko, A. S., *et al.*) 18 3613
- Droplets, impulse corona, positive, negative  
(Phelps, C. T., *et al.*) 24 4483
- Evaporation, oceans, particles, organic [br]  
(Barger, W. R., *et al.*) 24 4561
- Evaporation, turbulence, vapor transport  
(Yeh, Gour-Tsyh, *et al.*) 27 5173
- Humidity, altitude dependence, isotopes, HASL data  
(Craig, H., *et al.*) 9 1723
- Humidity, global, Nimbus 3  
(Conrath, B. J., *et al.*) 30 5831
- Precipitation, tritium  
(Kigoshi, Kunihiro, *et al.*) 15 2981
- Precipitation, tritium, Crater Lake, Oregon  
(Simpson, H. James.) 27 5195
- Precipitation, Cd<sup>109</sup>, Calgary, Canada [br]  
(Ezemenari, F. R. C., *et al.*) 27 5271
- Precipitation, clouds, isotopes  
(Perkins, R. W., *et al.*) 15 3076
- Precipitation, composition, Antarctica, east  
(Matveyev, A. A.) 18 3686
- Precipitation, composition, USSR  
(Petrenchuk, O. P., *et al.*) 18 3629
- Precipitation, fallout debris, mid-latitudes  
(Malakhov, S. G., *et al.*) 18 3623
- Precipitation, isotopes, Mediterranean region  
(Gat, J. R., *et al.*) 15 3039
- Precipitation, particles, aerosol, Brownian motion  
(Slinn, W. G. N., *et al.*) 12 2267
- Precipitation, radioactive tracers, Hadley cell  
(Bhandari, N., *et al.*) 15 2974
- Precipitation, Sr<sup>90</sup>, seasonal variations, zonal  
(Ehhalt, D. H., *et al.*) 15 3027
- Precipitation, trace elements, USSR  
(Drozdova, V. M., *et al.*) 18 3610
- Precipitation, wash-out isotopes  
(Bakulin, V. N., *et al.*) 18 3669
- Raindrops, charge drain, thunderstorms  
(Loeb, Leonard B.) 30 5882
- Raindrops, charge, mass, external electric fields [br]  
(Dawson, G. A.) 3 701
- Raindrops, charge, mass, intense external electric fields  
(Latham, J., *et al.*) 3 515
- Raindrops, charge, mass, intense external electric fields [d]  
(Phelps, C. T.) 24 4587



- Raindrops, charge, mass, intense external electric fields [d]  
(Dawson, G. A., *et al.*) 24 4589
- Raindrops, charge, mass, intense external electric fields [r]  
(Latham, J., *et al.*) 24 4593
- Raindrops, cloud drops, hail, accretion, thunderstorms  
(Sartor, J. Doyne.) 36 7547
- Raindrops, coalescence equation  
(Bleck, Rainer.) 27 5165
- Raindrops, collision, breakup, experimental studies  
(List, Roland, *et al.*) 36 7573
- Raindrops, collision efficiencies  
(Paluch, Ilga R.) 9 1633
- Raindrops, corona, positive, negative  
(Dawson, G. A.) 12 2153
- Raindrops, size, impurity concentrations  
(Georgii, Hans Walter, *et al.*) 9 1727
- Size distribution, particles  
(Carnuth, W.) 15 2999
- Snow, electrical charge  
(Burrows, D. A., *et al.*) 24 4499
- Tritium, Europe, western  
(Schell, W. R., *et al.*) 12 2251
- Tritium, Norway, Trondheim  
(Gulliksen, Steinar.) 12 2247
- Tritium, United States, west [br]  
(Leventhal, J. S., *et al.*) 36 7628
- Waves**
- Atmospheric, insect speeds  
(Atlas, David, *et al.*) 36 7588
- Atmospheric tides, balloons  
(Beyers, Norman J., *et al.*) 18 3513
- Gravity, ducts, periodic wind shears [br]  
(Liu, C. H.) 7 1339
- Gravity, eclipse [l]  
(Chimonas, G., *et al.*) 4 875
- Gravity, hydromagnetic coupling  
(Kato, S., *et al.*) 13 2540
- Gravity, internal, eclipse, solar  
(Chimonas, G.) 28 5545
- Gravity, internal, eddy diffusion [l]  
(Hines, C. O.) 19 3937
- Gravity, internal, radar  
(Gossard, E. E., *et al.*) 18 3523
- Gravity, internal, radar [d]  
(Hines, C. O.) 30 5956
- Gravity, model, shock formation  
(Einaudi, F.) 1 193
- Pressure, spectra, soil surface  
(Kimball, B. A., *et al.*) 33 6771
- Shock, cylindrical, numerical analysis, lightning [d]  
(Few, A. A., *et al.*) 21 4192
- Shock, cylindrical, numerical analysis, lightning [r]  
(Troutman, W. W.) 21 4196
- Troposphere, cusped structure, radar  
(Gossard, E. E., *et al.*) 18 3523
- Troposphere, cusped structure, radar [d]  
(Hines, C. O.) 30 5956
- Wave propagation, dispersion bandwidth  
(Gossard, Earl E., *et al.*) 7 1324
- Winds**
- Currents, electrical, corona point  
(Chapman, Seville.) 12 2165
- Irregular, 100 km, structure, distribution  
(Justus, C. G.) 12 2171
- Jet stream, aerosols, radioactive, USSR  
(Nazarov, L. E., *et al.*) 18 3575
- Stratopause, 48 km  
(Ballard, Harold N., *et al.*) 18 3501
- Mineral data**
- Copper**
- Equations of state  
(O'Keeffe, David J.) 11 1947
- Garnet**
- Ferromagnesian, composition, bulk modulus  
(Takahashi, Taro, *et al.*) 29 5757
- Gibeon iron**
- Meteorites, Gibeon  
(Gordon, Robert B.) 2 439
- Goethite**
- Hematite, water, Mars  
(Pollack, James B., *et al.*) 35 7480
- Oxides**
- Experimental studies, bulk modulus, volume [br]  
(Anderson, Don L., *et al.*) 17 3494
- Experimental studies, bulk modulus, volume [c]  
(Anderson, Don L., *et al.*) 26 5141
- Quartz**
- Thermal properties, high-low quartz boundary  
(Silverman, S. M.) 2 406
- Silicates**
- Olivine, diopside, oligoclase, radiative thermal conductivity, infrared spectra  
(Aronson, J. R., *et al.*) 17 3443
- Stishovite**
- Equations of state  
(Ahrens, Thomas J., *et al.*) 2 310
- Titanomagnetite**
- Properties, magnetic, basalt  
(Ozima, Mituko, *et al.*) 5 1003
- Mineralogy**
- Equations of state**
- Compression, isothermal [br]  
(Mao, Nai-hsien.) 35 7508

- Copper**  
(O'Keefe, David J.) 11 1947
- Garnet, diamond, inclusions, thermal expansion**  
(Harris, J. W., *et al.*) 29 5775
- Garnet, ferromagnesian, bulk modulus, composition**  
(Takahashi, Taro, *et al.*) 29 5757
- Melting temperature, pressure, Simon equation [br]**  
(Kennedy, G. C., *et al.*) 5 1019
- MgO**  
(Spetzler, Hartmut.) 11 2073
- Murnaghan equation, Birch equation, seismic parameter**  
(Chung, D. H., *et al.*) 26 5113
- Oxides, bulk modulus, volume [br]**  
(Anderson, Don L., *et al.*) 17 3494
- Oxides, bulk modulus, volume [c]**  
(Anderson, Don L., *et al.*) 26 5141
- Stishovite**  
(Ahrens, Thomas J., *et al.*) 2 310
- Structures, cubic, NaCl, CsCl, ZnS, elastic properties, pressure**  
(Anderson, Orson L.) 14 2719
- Volume, high pressure, extrapolation formula**  
(Fritz, T. C., *et al.*) 8 1557
- Wachman-Anderson relation, accuracy**  
(Pastine, D. John.) 35 7421
- Instruments**  
Ultrasonic interferometry, 1000°K, 10 kb  
(Spetzler, Hartmut.) 11 2073
- Lattice mechanics**  
Bulk modulus, volume, composition, garnet, ferromagnesian  
(Takahashi, Taro, *et al.*) 29 5757
- Oxides, bulk modulus, volume [br]**  
(Anderson, Don L., *et al.*) 17 3494
- Oxides, bulk modulus, volume [c]**  
(Anderson, Don L., *et al.*) 26 5141
- Structures, cubic, NaCl, CsCl, ZnS, elastic properties, pressure**  
(Anderson, Orson L.) 14 2719
- Phase changes**  
Magmas, genesis, thermodynamic problems  
(Ids, Yoshiaki.) 20 4051
- Mantle, uplift**  
(Magnitsky, V. A., *et al.*) 5 877
- Properties**  
Thermal, high-low quartz boundary  
(Silverman, S. M.) 2 406
- Structure**  
Mica, kink bands  
(Hörz, Friedrich.) 5 965
- Moon**  
*Experimental studies*  
Thermal conductivity, density, basalt, particulate [br]  
(Fountain, James A., *et al.*) 20 4063
- Genesis*  
Hypotheses, capture, binary-planet, fission, precipitation  
(Ringwood, A. E.) 32 6453
- Hypothesis, fission, proto-earth, spin-up, geochemistry  
(O'Keefe, John A.) 32 6565
- Geochemistry*  
Surface, alpha-scattering  
(Economou, Thanasis E., *et al.*) 32 6514
- Geophysical surveys*  
Infrared, highlands, maria  
(Murcray, F. H., *et al.*) 14 2662
- Infrared, highlands, maria  
(Salisbury, John W., *et al.*) 14 2671
- Interior*  
Conductivity, solar wind, shock waves  
(Hollweg, Joseph V.) 7 1209
- Convection, model  
(Turcotte, D. L., *et al.*) 32 6549
- Electrical conductivity, solar wind  
(Sill, W. R., *et al.*) 1 201
- Mascons, genesis  
(Wise, Donald U., *et al.*) 2 261
- Mascons, gravity field  
(Booker, John R., *et al.*) 32 6558
- Mascons, soils, petrology, lunar crust  
(Wood, John A.) 32 6497
- Magnetic field*  
Solar wind, Mach cone, Explorer 35  
(Whang, Y. C., *et al.*) 31 6002
- Mineralogy*  
Basalt, Apollo 11  
(Brown, G. Malcolm.) 32 6480
- Petrology*  
Basalt, Apollo 11  
(Brown, G. Malcolm.) 32 6480
- Basalt, petrogenesis, lunar origin  
(Ringwood, A. E.) 32 6453
- Regolith, ilmenite basalts, Apollo 11  
(James, Odette B., *et al.*) 29 5793
- Soils, lunar crust, mascons  
(Wood, John A.) 32 6497
- Properties*  
Electrical, dielectric permittivity, dissipation factor, conductivity, Apollo 11  
(Chung, D. H., *et al.*) 32 6524
- Heat capacity, thermal conductivity, Apollo 11, 10017, 10046  
(Morrison, J. A., *et al.*) 32 6553

*Surface*

- Differential drift scans, 22 microns  
(Mendell, W. W., *et al.*) 17 3319
- Infrared spectra, silicates, spectral  
contrast, particle size  
(Logan, Lloyd M., *et al.*) 32 6539
- Luminescence  
(Snouse, Thomas W., *et al.*) 8 1573
- Properties, optical, Apollo 11  
(O'Leary, Brian, *et al.*) 32 6532
- Radar reflection  
(Burns, Alan A.) 8 1467

*Surface features*

- Control positions, maps  
(Nance, Richard.) 11 2029
- Crater destruction, size distribution,  
theoretical studies  
(Marcus, Allan H.) 26 4977
- Craters, erosion  
(Chapman, Clark R., *et al.*) 8 1445
- Craters, erosion, model  
(Soderblom, Laurence A.) 14 2655
- Craters, experimental studies,  
hypervelocity impact, loose sand  
(Braslau, David.) 20 3987
- Elastic properties, Surveyor  
(Sutton, George H., *et al.*) 35 7439
- Glasses, impact origin, composition,  
Apollo 11, Apollo 12  
(Chao, E. C. T., *et al.*) 35 7445
- Seismogram, secondary ejecta, Apollo 12,  
LM  
(Chang, G. K., *et al.*) 35 7426

*North America**Absolute age*

- Florida, Brevard county, Cape Kennedy  
(Osmond, J. K., *et al.*) 2 469

*Aeronomy*

- Stratopause, 48 km, balloon experiment,  
United States  
(Ballard, Harold N., *et al.*) 18 3501

*Geodesy*

- Isostasy, United States [c]  
(Lewis, Brian T. R., *et al.*) 23 4482
- Isostasy, United States, model  
(Lewis, Brian T. R., *et al.*) 17 3367

*Geophysical surveys*

- California, Sierra Nevada, heat sources,  
prebatholithic rock  
(Wollenberg, Harold A., *et al.*) 2 431
- Wisconsin arch, magnetotelluric currents  
(Dowling, Forrest L.) 14 2683

*Gravity surveys*

- Alaska, Katmai National Monument  
(Kienle, Jürgen.) 32 6641
- Illinois, regional, tectonics  
(McGinnis, L. D.) 2 317

*Hydrology*

- Geysers, Lake county, Oregon [br]  
(Rinehart, John S.) 32 6714
- Glaciers, icequakes, Athabasca glacier,  
Alberta, Canada  
(Neave, K. G., *et al.*) 8 1351
- Ground water, transport, buried heat  
source  
(Reed, Walter E.) 2 415

*Meteorology*

- Aerosols, composition, Chicago, Illinois  
(Brar, S. S., *et al.*) 15 2939
- Aerosols, composition, chlorine, bromine,  
Great Lakes region  
(Loucks, Ronald H., *et al.*) 12 2311
- Aerosols, Death Valley, California  
(Blifford, Irving H., Jr.) 15 3099
- California, convection, dust devils, Mojave  
desert  
(Carroll, J. J., *et al.*) 27 5179
- Composition, nitrous oxide, Panama  
(LaHue, Miles D., *et al.*) 15 2922
- Composition, stratopause, White Sands,  
New Mexico  
(Scholz, T. G., *et al.*) 15 3049
- Dust devils, electrical phenomena, New  
Mexico [br]  
(Crozier, W. D.) 24 4583
- Electrical phenomena, lightning, Mount  
Lemmon, Arizona  
(Shaw, Glenn E.) 12 2159
- Electrical phenomena, space charge,  
water, Lake Superior region  
(Gathman, Stuart G., *et al.*) 6 1041
- Fallout debris, Sr<sup>90</sup>, Atlantic Ocean  
(Freudenthal, Peter C.) 21 4089
- Illinois, diffusion, Rn<sup>222</sup>  
(Bradley, Wayne E., *et al.*) 30 5890
- Lake Michigan, fallout debris,  
concentration, Sr<sup>90</sup>  
(Machta, L., *et al.*) 6 1092
- Oregon, Crater Lake, fallout debris,  
concentrations, Sr<sup>90</sup>  
(Volchok, H. L., *et al.*) 6 1084
- Oregon, Crater Lake, United States, west,  
tritium [br]  
(Leventhal, J. S., *et al.*) 36 7628
- Oregon, precipitation, tritium, Crater Lake  
(Simpson, H. James.) 27 5195
- Particles, dust, Phoenix, Arizona  
(Idso, Sherwood B., *et al.*) 12 2179
- Precipitation, Cd<sup>109</sup>, Calgary, Canada [br]  
(Ezemenari, F. R. C., *et al.*) 27 5271
- Winds, irregular, 100 km, Eglin AFB,  
Florida  
(Justus, C. G.) 12 2171
- Winds, irregular, 100 km, Yuma, Arizona  
(Justus, C. G.) 12 2171



- Mineralogy**  
 Titanoclinohumite, Utah, San Juan county, Moses Rock dike (McGetchin, T. R., *et al.*) 2 255
- Paleoclimatology**  
 United States, northeast, temperature, freshwater carbonates (Stuiver, Minze.) 27 5247
- Paleomagnetism**  
 Canada, Sudbury eruptive, intensity, inclination (Schwarz, E. J., *et al.*) 32 6631  
 Minnesota, Precambrian, pole position, Keweenaw intrusive rocks (Beck, Myrl E., Jr.) 26 4985
- Petrology**  
 New York, petrogenesis, Sr-87/Sr-86 (Spoonier, C. M., *et al.*) 32 6706  
 Utah, Moses Rock, inclusion [c] (Gavasci, A.T., *et al.*) 23 4481
- Seismic surveys**  
 Alaska, Katmai National Monument, refraction (Gedney, Larry, *et al.*) 14 2619  
 California, Mono basin, structure [d] (Pakiser, L. C.) 20 4077  
 California, Mono basin, structure [r] (Christensen, M. N., *et al.*) 20 4081  
 California, Mono basin, structure [r] (Pakiser, L. C.) 20 4083  
 Canada, reflecting horizons, anisotropy (Clowes, R. M., *et al.*) 32 6693  
 United States, gravity high, mid-continent (Mooney, Harold M., *et al.*) 26 5056
- Seismology**  
 Alaska, earthquake prediction (Kelleher, John A.) 29 5745
- Structural geology**  
 California, Benioff zones (Ernst, W. G.) 5 886  
 California, San Andreas fault [d] (Byerlee, James D.) 2 499
- Tectonophysics**  
 Crust, flexural rigidity, thickness, viscosity (Walcott, R. I.) 20 3941
- Northern hemisphere**  
**Aeronomy**  
 Temperatures, annual cycle, stratosphere [br] (Adelfang, S. I.) 27 5259
- Oceanography**  
**Boundary layer processes**  
 Bottom currents, Hurricane Camille, Gulf of Mexico [br] (Murray, Stephen P.) 24 4579  
 Bubbles, coastal waters (Medwin, Herman.) 3 599  
 Carbon dioxide, carbon cycle (Walton, A., *et al.*) 15 3089  
 Carbon monoxide, atmosphere (Seiler, W., *et al.*) 12 2217  
 CO<sub>2</sub>, C<sup>14</sup>, residence time (Nydal, Reidar, *et al.*) 12 2271  
 CO<sub>2</sub>, C<sup>14</sup>, tritium (Suess, H. E.) 12 2363  
 Currents, Somali current system, monsoon, Indian Ocean [br] (Bruce, J. G.) 21 4170  
 Deposition, particles, atmosphere (Möller, U., *et al.*) 15 3013  
 Evaporation [br] (Barger, W. R., *et al.*) 24 4561  
 Fallout debris, concentration, Sr<sup>90</sup> (Volchok, H. L., *et al.*) 6 1084  
 Fallout debris, concentration, Sr<sup>90</sup> (Machta, L., *et al.*) 6 1092  
 Fallout debris, concentrations (Nguyen Ba Cuong, *et al.*) 15 2877  
 Internal waves, magnetic fields, induced, model (Beal, H. T., *et al.*) 33 6846  
 Mass transport, waves, Lagrangian equations (Ünlüata, Ümit, *et al.*) 36 7611  
 Mediterranean region, Levant, precipitation (Gat, J. R., *et al.*) 15 3039  
 Model, box, global oceanic mixing, carbon, CO<sub>2</sub>, CaCO<sub>3</sub> (Broecker, Wallace S., *et al.*) 18 3545  
 Pacific Ocean, transition zone, wind stress distribution (Roden, Gunnar I.) 6 1097  
 Plume, forced, stratified fluid, model (Fox, Douglas G.) 33 6818  
 Radon, gas exchange rates, Geosecs, 1969 (Broecker, Wallace S., *et al.*) 36 7679  
 Sea ice, water, convection (Lewis, E. L., *et al.*) 33 6836  
 Sea water, evaporation, hurricanes, Faith, 1966 (Östlund, H. Göte.) 12 2303  
 Sea water, plutonium, concentrations, Sea of Japan (Miyake, Y., *et al.*) 12 2329  
 Sofar, hydrophone network, submarine eruptions [I] (Norris, Roger A., *et al.*) 11 2144  
 Surf zone, space charge (Gathman, Stuart G., *et al.*) 24 4525  
 Surface waves, wind (Plate, Erich, *et al.*) 18 3537  
 Vertical momentum flux, Langmuir circulation [br] (Gordon, Arnold L.) 21 4177

- Vertical momentum flux, Langmuir circulation [d]  
(Stewart, Ronald.) 36 7635
- Wind stress, air-sea interface  
(Smith, Stuart D.) 33 6758
- Circulation*
- Antarctic Ocean, Indian Ocean, radium [br]  
(Ku, T. L., *et al.*) 27 5286
- Antarctic Ocean, Indian Ocean, radium [d]  
(Edmond, John M.) 33 6878
- Atlantic Ocean, Africa, southwest, upwelling, Benguela current  
(Schell, I. I.) 27 5225
- Bottom currents, Hurricane Camille [br]  
(Murray, Stephen P.) 24 4579
- Caribbean sea, deep-water renewal  
(Sturges, Wilton.) 36 7602
- CO<sub>2</sub>, O<sub>2</sub>, diffusion, Geosecs, 1969  
(Craig, H., *et al.*) 36 7641
- Currents, inertial flow, 30 m, low latitude [br]  
(Warsh, K. L., *et al.*) 12 2207
- Gulf of Mexico, current patterns, temperature  
(Leipper, Dale F.) 3 637
- Indian Ocean, Somali current system [br]  
(Bruce, J. G.) 21 4170
- Model, Rossby-wave reflection  
(Gates, W. Lawrence.) 21 4105
- Pacific Ocean, Oregon, temperature inversions, upwelling, turbulence  
(Pak, Hasong, *et al.*) 3 629
- Pacific Ocean, Panama bight  
(Stevenson, Merritt.) 3 659
- Suspended particles, thermocline structure  
(Costin, J. M.) 21 4144
- Vertical momentum flux, Langmuir circulation [br]  
(Gordon, Arnold L.) 21 4177
- Vertical momentum flux, Langmuir circulation [d]  
(Stewart, Ronald.) 36 7635
- Diffusion*
- CO<sub>2</sub>, O<sub>2</sub>, Geosecs, 1969  
(Craig, H., *et al.*) 36 7641
- Gulf of Mexico, Mississippi river, salinity  
(Droppleman, J. D., *et al.*) 30 5909
- Pacific Ocean, Kauai channel  
(Schuert, Edward A.) 3 673
- Plume region, Columbia river [br]  
(Pak, Hasong, *et al.*) 24 4570
- Vertical, settling velocities, turbulent water  
(Murray, Stephen P.) 9 1647
- Distribution*
- Carbon, organic, Gulf of Mexico  
(Fredericks, Alan D., *et al.*) 12 2199
- Experimental studies*
- Sea surface, microwave radiometry  
(Hollinger, James P.) 27 5209
- Surface waves, correlation function  
(Medwin, H., *et al.*) 24 4519
- Surface waves, run-up [br]  
(Meyer, R. E.) 3 687
- General*
- Geosecs test station, results, 1969  
(Turekian, Karl K.) 36 7639
- Instruments*
- Bubbles, acoustic measurements  
(Medwin, Herman.) 3 599
- Salinity, microwave radiometry, airborne  
(Droppleman, J. D., *et al.*) 30 5909
- Sea surface, microwave radiometry  
(Hollinger, James P.) 27 5209
- Surface waves, accelerometer  
(Gilbert, R. L. G.) 27 5215
- Waves, profilometer, laser, airborne  
(Olsen, Wiley S., *et al.*) 12 2185
- Sea ice*
- Drift, Atlantic Ocean, Gulf of St. Lawrence [br]  
(Farmer, D., *et al.*) 15 2863
- Ice floes, roughness parameter, Atlantic Ocean, Gulf of St. Lawrence, Arctic region [br]  
(Johannessen, Ola M.) 15 2857
- Ice floes, wind, Atlantic Ocean, north  
(Smith, S. D., *et al.*) 15 2803
- Salt rejection  
(Lake, R. A., *et al.*) 3 583
- Sheet, water structure, convection  
(Lewis, E. L., *et al.*) 33 6836
- Sea water*
- Barium, Pacific Ocean, Geosecs, 1969  
(Wolgemuth, K.) 36 7686
- Carbon, inorganic, Pacific Ocean, Geosecs, 1969  
(Kroopnick, P., *et al.*) 36 7668
- Carbon, radioactive, Pacific Ocean, north, Geosecs, 1969  
(Östlund, H. Göte, *et al.*) 36 7667
- Carbonate, Geosecs, 1969  
(Takahashi, Taro, *et al.*) 36 7648
- Chemistry, carbon-13, abyssal, Pacific Ocean, south [br]  
(Craig, H.) 3 691
- Density, temperature, salinity [br]  
(Weyl, Peter K.) 12 2209
- Geochemistry, Arctic Ocean, Amerasian basin  
(Kinney, Patrick, *et al.*) 21 4097

- He<sup>3</sup>, Pacific Ocean, north, Geosecs, 1969  
 (Clarke, W. B., *et al.*) 36 7676  
 Ice, interface, sound, reflectance  
 (Langleben, M. P.) 27 5243  
 Ice, salt rejection  
 (Lake, R. A., *et al.*) 3 583  
 Optical properties, Atlantic Ocean, north  
 (Morrison, Robert E.) 3 612  
 Paleotemperatures, Gulf of Mexico [br]  
 (Sackett, William M., *et al.*) 24 4557  
 Plutonium, Sea of Japan  
 (Miyake, Y., *et al.*) 12 2329  
 Radium, Pacific Ocean, north, Geosecs,  
 1969  
 (Broecker, Wallace, *et al.*) 36 7682  
 Radon, Pacific Ocean, north, Geosecs,  
 1969  
 (Broecker, Wallace S., *et al.*) 36 7679  
 Salinity, Gulf of Mexico, Mississippi river  
 (Droppleman, J. D., *et al.*) 30 5909  
 Structure, sea ice  
 (Lewis, E. L., *et al.*) 33 6836  
 Temperature, Gulf of Mexico, circulation,  
 current patterns  
 (Leipper, Dale F.) 3 637  
 Temperature, infrared, spatial spectra,  
 interpretation [br]  
 (McLeish, William.) 33 6872  
 Temperature, inversions, Oregon  
 (Pak, Hasong, *et al.*) 3 629  
 Temperature, radiation thermometry,  
 airborne, corrections  
 (Saunders, Peter M.) 36 7596  
 Temperature, thermocline, permanent,  
 Bermuda  
 (Wunsch, Carl, *et al.*) 30 5899  
 Temperature, surface, variations, Pacific  
 Ocean, north  
 (Namias, Jerome.) 3 565  
 Trace elements, Pacific Ocean, northeast  
 (Spencer, Derek W., *et al.*) 36 7688  
 Tritium, Pacific Ocean, north, Geosecs,  
 1969  
 (Roether, Wolfgang, *et al.*) 36 7672  
*Sedimentation*  
 Caribbean sea, turbidity  
 (Costin, J. M.) 21 4144  
 Model, particle size, hyperbolic  
 distribution  
 (Bader, Henri.) 15 2822  
 Sand transport, longshore currents  
 (Komar, Paul D., *et al.*) 30 5914  
*Techniques*  
 Interface, sea water, sea ice, sound,  
 submarines  
 (Langleben, M. P.) 27 5243  
 Isotopes, Ar<sup>37</sup>, Ar<sup>39</sup>, Kr<sup>81</sup>, tracers  
 (Loosli, H. H., *et al.*) 15 2895  
 Radar sea echo, Doppler spectra  
 (Valenzuela, G. R., *et al.*) 3 551  
 Radiation thermometry, airborne,  
 corrections  
 (Saunders, Peter M.) 36 7596  
*Temperature*  
 Surface, temporal coherence, Pacific  
 Ocean, north [br]  
 (Namias, Jerome, *et al.*) 30 5952  
*Theoretical studies*  
 Breaking waves, structure [br]  
 (Price, R. K.) 27 5276  
 Convection, thermal, numerical methods  
 (Faller, Alan J., *et al.*) 3 521  
 Model, box, global oceanic mixing  
 (Broecker, Wallace S., *et al.*) 18 3545  
 Sea foam, microwave emissivity [br]  
 (Droppleman, J. D.) 3 696  
 Surface waves, rotating system  
 (Pollard, R. T.) 30 5895  
*Tides*  
 Tidal currents, Flaser bedding, genesis  
 (McCave, I. N.) 21 4151  
*Turbulence*  
 Bottom features [br]  
 (Karcz, Iaakov.) 15 2869  
 Eddy diffusion, isotopes [br]  
 (Beran, M., *et al.*) 27 5279  
 Eddy diffusion, Pacific Ocean, Kauai  
 channel  
 (Schuert, Edward A.) 3 673  
 Plume, forced, stratified fluid, Reynolds  
 stresses  
 (Fox, Douglas G.) 33 6818  
 Settling velocities, vertical diffusion  
 (Murray, Stephen P.) 9 1647  
 Suspended particles, Caribbean sea  
 (Costin, J. M.) 21 4144  
*Water masses*  
 Antarctic Ocean, Indian Ocean, radium,  
 [d]  
 (Edmond, John M.) 33 6878  
 Antarctic Ocean, radium [br]  
 (Ku, T. L., *et al.*) 27 5286  
 Arctic Ocean, Amerasian basin, sea water,  
 chemistry  
 (Kinney, Patrick, *et al.*) 21 4097  
 Atlantic Ocean, Africa, southwest,  
 upwelling, Benguela current  
 (Schell, I. I.) 27 5225  
 Bering sea, thermal structure [br]  
 (Kitano, Kiyomitsu.) 6 1110  
 Caribbean sea, deep-water renewal  
 (Sturges, Wilton.) 36 7602  
 Caribbean sea, suspended particles,  
 temperature  
 (Costin, J. M.) 21 4144



- Gulf of Mexico, carbon, organic  
(Fredericks, Alan D., *et al.*) 12 2199
- Mixing, global scale, box model  
(Broecker, Wallace S., *et al.*) 18 3545
- Pacific Ocean, California, San Diego,  
thermocline cycle [br]  
(Cairns, J. L., *et al.*) 6 1127
- Pacific Ocean, transition zone, wind stress  
distribution  
(Roden, Gunnar I.) 6 1097
- Thermocline, permanent, Bermuda,  
internal waves  
(Wunsch, Carl, *et al.*) 30 5899
- Waves**
- Gravity, longshore currents, radiation  
stress, eddy viscosity  
(Longuet-Higgins, M. S.) 33 6790
- Gravity, longshore currents, theoretical  
studies  
(Longuet-Higgins, M. S.) 33 6778
- Gravity, mass transport [d]  
(Huang, Norden E.) 12 2211
- Gravity, mass transport [r]  
(Chang, Ming-Shun.) 12 2213
- Internal, Bering sea, thermal structure  
[br]  
(Kitano, Kiyomitsu.) 6 1110
- Internal, magnetic field, induced, model  
(Beal, H. T., *et al.*) 33 6846
- Internal, model, rotating system, hydraulic  
jumps  
(Williams, R. T., *et al.*) 15 2813
- Internal, thermocline cycle, San Diego  
[br]  
(Cairns, J. L., *et al.*) 6 1127
- Internal, thermocline, permanent,  
Bermuda  
(Wunsch, Carl, *et al.*) 30 5899
- Mass transport, Lagrangian equations,  
boundary conditions  
(Ünlüata, Ümit, *et al.*) 36 7611
- Surface, bottom features [br]  
(Karcz, Jaakov.) 15 2869
- Surface, breaking, gentle slope  
(Divoky, David, *et al.*) 9 1681
- Surface, breaking waves, structure [br]  
(Price, R. K.) 27 5276
- Surface, correlation function, wave height  
(Medwin, H., *et al.*) 24 4519
- Surface, fine-scale structure [br]  
(Dobson, E. B.) 15 2853
- Surface, forecasting, ocean-wave spectra  
(Bunting, D. C.) 21 4131
- Surface, model, rotating system  
(Pollard, R. T.) 30 5895
- Surface, phase velocity, drift current, wind  
(Plate, Erich, *et al.*) 18 3537
- Surface, sand transport, longshore  
(Komar, Paul D., *et al.*) 30 5914
- Surface, Stokes drift, surface drift [l]  
(Wright, John W.) 15 2847
- Surface, volume transport, Stokes drift  
[br]  
(Kenyon, Kern E.) 6 1133
- Surface, wave setup, nonperiodic wave  
train  
(Hwang, Li-San.) 21 4121
- Tsunamis, models, Good Friday earthquake,  
Alaska, March 1964  
(Hwang, Li-San, *et al.*) 33 6802
- Wave propagation, dispersion bandwidth  
(Gossard, Earl E., *et al.*) 7 1324
- Pacific Ocean**
- Earthquakes**
- Japan, Kyushu, October 1963  
(Bollinger, G. A.) 5 955
- Regional, Indonesia, Philippine islands  
(Fitch, Thomas J., *et al.*) 8 1431
- Geochemistry**
- East Pacific Rise, Gorda Rise, Juan de  
Fuca ridge  
(Kay, R., *et al.*) 8 1585
- Geophysical surveys**
- Hawaiian arch, heat flow  
(Slater, J. G., *et al.*) 2 333
- Juan de Fuca ridge, heat flow  
(Lister, C. R. B.) 14 2648
- Philippine islands, Alaska, Amchitka  
island, heat flow  
(Sass, J. H., *et al.*) 23 4387
- Tonga-Kermadec system  
(Karig, Daniel E.) 2 239
- Gravity surveys**
- New Zealand, North Island  
(Hatherton, Trevor.) 2 269
- Marine geology**
- Sediments, Coral Sea  
(Ewing, John I., *et al.*) 11 1963
- Sediments, physical properties,  
compressional waves, velocities  
(Hamilton, Edwin L.) 23 4423
- Sediments, velocities, California  
(Hamilton, E. L., *et al.*) 20 4039
- Meteorology**
- Aerosols**
- (Blifford, Irving H., Jr.) 15 3099
- Circulation, interhemispheric mixing,  
fallout debris  
(Dmitriyeva, G. V., *et al.*) 18 3675
- Particles, marine, organic, Hawaii [br]  
(Barger, W. R., *et al.*) 24 4561
- Oceanography**
- Barium, Geosecs, 1969  
(Wolgemuth, K.) 36 7686

- California, San Diego, thermocline cycle  
[br]  
(Cairns, J. L., *et al.*) 6 1127
- Carbon, inorganic, Geosecs, 1969  
(Kroopnick, P., *et al.*) 36 7668
- Circulation, Oregon, temperature  
inversions, upwelling, turbulence  
(Pak, Hasong, *et al.*) 3 629
- Circulation, Panama bight  
(Stevenson, Merritt.) 3 659
- CO<sub>2</sub>, O<sub>2</sub>, Geosecs, 1969  
(Craig, H., *et al.*) 36 7641
- Diffusion, Kauai channel, Oahu, Hawaii  
(Schuert, Edward A.) 3 673
- East, carbonate, Geosecs, 1969  
(Takahashi, Taro, *et al.*) 36 7648
- Hydrosols, equatorial  
(Beardsley, George F., Jr., *et al.*) 15 2837
- North, He<sup>3</sup>, excess, Geosecs, 1969  
(Clarke, W. B., *et al.*) 36 7676
- North, radiocarbon, Geosecs, 1969  
(Östlund, H. Göte, *et al.*) 36 7667
- North, radium, Geosecs, 1969  
(Broecker, Wallace, *et al.*) 36 7682
- North, radon, radium  
(Broecker, Wallace S., *et al.*) 36 7679
- North, temperature, surface variations  
(Namias, Jerome.) 3 565
- North, tritium, Geosecs, 1969  
(Roether, Wolfgang, *et al.*) 36 7672
- Northeast, trace elements, sea water,  
Geosecs, 1969  
(Spencer, Derek W., *et al.*) 36 7688
- Sea water, plutonium, Sea of Japan  
(Miyake, Y., *et al.*) 12 2329
- South, sea water, carbon-13, abyssal [br]  
(Craig, H.) 3 691
- Temperature, surface, temporal coherence  
[br]  
(Namias, Jerome, *et al.*) 30 5952
- Thermal structure, Bering sea [br]  
(Kitano, Kiyomitsu.) 6 1110
- Transition zone, wind stress distribution  
(Roden, Gunnar I.) 6 1097
- Tsunami, model, Good Friday earthquake,  
Alaska, March 1964  
(Hwang, Li-San, *et al.*) 33 6802
- Paleomagnetism**  
Cenozoic, stratigraphy  
(Foster, John H., *et al.*) 23 4465
- Cretaceous, seamounts, regional  
(Francheteau, Jean, *et al.*) 11 2035
- Sea-floor spreading**  
Eastern Pacific rise  
(Northrop, John, *et al.*) 17 3285
- Seismic surveys**  
Coral Sea  
(Ewing, Maurice, *et al.*) 11 1953
- New Zealand, North Island  
(Mooney, Harold M.) 2 285
- North, equatorial, sonobuoy stations  
(Houtz, R., *et al.*) 26 5093
- Structural geology**  
North fracture zones, sea-floor spreading  
(Rea, David K.) 8 1421
- Tectonophysics**  
Crust, flexural rigidity, thickness, viscosity  
(Walcott, R. I.) 20 3941
- East Pacific Rise, sea-floor spreading,  
earthquakes, swarms  
(Sykes, Lynn R.) 32 6598
- Solomon islands, Woodlark basin,  
sea-floor spreading  
(Milsom, J. S.) 35 7335
- Volcanology**  
Mariana islands, sofah hydrophone  
network [l]  
(Norris, Roger A., *et al.*) 11 2144
- Paleomagnetism**  
**Cretaceous**  
Pacific Ocean, seamounts  
(Francheteau, Jean, *et al.*) 11 2035
- General**  
Intensity, inclination, Sudbury eruptive,  
Canada  
(Schwarz, E. J., *et al.*) 32 6631
- Lineations, short-wavelength, ocean  
bottom [d]  
(Peter, George.) 32 6717
- Lineations, short-wavelength, ocean  
bottom [r]  
(Luyendyk, Bruce P.) 32 6721
- Pole positions**  
Continental drift  
(Francheteau, Jean, *et al.*) 5 1023
- Continental drift [r]  
(Irving, E., *et al.*) 5 1027
- Precambrian, North America, Minnesota,  
Keweenaw intrusive rocks  
(Beck, Myrl E., Jr.) 26 4985
- Quaternary**  
Japan, 10,000 years, present, intensity  
(Kitazawa, Kazuhiro.) 35 7403
- Paleozoic**  
**Continental drift**  
Permian, Pangaea  
(Dietz, Robert S., *et al.*) 26 4939
- Paleogeography**  
Gondwanaland, ice cap, sea-floor  
spreading [br]  
(Gough, D. I.) 23 4475
- Paleomagnetism**  
Permian, invertebrate fossils, temperature  
(Stehli, Francis G.) 17 3325

**Planetology***Asteroids*

- Mechanics, 433 Eros, 1620 Geographos,  
exploration [I]  
(Staley, D. O.) 28 5571

*Experimental studies*

- Cratering, hypervelocity impact, loose  
sand  
(Braslau, David.) 20 3987

*General*

- Absorption, CO<sub>2</sub>, ultraviolet radiation,  
1655 Å, 1825 Å [I]  
(Heimerl, J.) 28 5574  
Atmosphere, CO<sub>2</sub> atmosphere, pure,  
photolysis [I]  
(Felder, W., *et al.*) 34 7311

*Mars*

- Atmosphere, CO<sub>2</sub>, photodissociation [I]  
(Clark, I. D., *et al.*) 34 7307  
Atmosphere, CO<sub>3</sub> formation [I]  
(DeMore, W. B.) 25 4898  
Atmosphere, CO<sub>3</sub> formation [r]  
(Hunten, D. M., *et al.*) 25 4900  
Atmosphere, composition, carbon dioxide  
(McElroy, Michael B., *et al.*) 7 1188  
Atmosphere, dayglow, excitation  
processes [I]  
(McConnell, John C., *et al.*) 34 7290  
Atmosphere, hydrogen, water vapor,  
photochemistry, transport, escape  
(Hunten, D. M., *et al.*) 31 5989  
Experimental studies, CO<sub>2</sub>-H<sub>2</sub>O frosts,  
spectral reflectance  
(Kieffer, Hugh.) 3 501  
Experimental studies, thermal  
conductivity, density, basalt, particulate  
[br]  
(Fountain, James A., *et al.*) 20 4063  
Polar caps, composition, spectral  
reflectance  
(Kieffer, Hugh.) 3 510  
Surface features, goethite, hematite, water  
(Pollack, James B., *et al.*) 35 7491  
Surface features, polar caps, frosts,  
goethite  
(Pollack, James B., *et al.*) 35 7480

*Meteoritics*

- Absolute age, carbonaceous chondrites  
(Kaushal, Sushil K., *et al.*) 2 463  
Allende, Sprucefield, Alandroal, cosmic  
rays  
(Fireman, E. L., *et al.*) 11 2115  
Carbonaceous chondrites, Leoville, xenon  
(Manuel, O. K., *et al.*) 29 5693  
Composition, Bruderheim, Homestead,  
Allende, electron  
paramagnetic resonance, nuclear

- magnetic resonance  
(Chatelain, A., *et al.*) 29 5681  
Enstatite chondrites, Sr/Rb  
(Gopalan, K., *et al.*) 17 3457  
Experimental studies, Zn<sup>65</sup>, Mn<sup>54</sup>, copper  
(Ginneken, A. Van, *et al.*) 26 5121  
Feldspar, Al<sup>26</sup>, Mg<sup>26</sup>, age  
(Clarke, W. B., *et al.*) 2 448  
Gadolinium, isotopic composition  
(Eugster, O., *et al.*) 14 2753  
Iron, mechanical properties, genesis  
(Gordon, Robert B.) 2 439  
Iron oxides, Wolf Creek, Cumberland  
Falls, Clovis (No. 1), Mössbauer  
spectroscopy  
(Sprenkel-Segel, E. L.) 32 6618  
Meteor showers, Orionid, Leonid,  
microparticles, ionosphere  
(Ferry, G. V., *et al.*) 4 859  
Meteoroids, distribution, origin  
(Dohnanyi, J. S.) 17 3468  
Processes, ablation [I]  
(Baldwin, Barrett, *et al.*) 2 495  
Spallation yields, xenon  
(Hohenberg, C. M., *et al.*) 22 4205  
Techniques, collecting configurations,  
meteoric dust  
(Kornblum, Joseph J.) 20 3976

*Moon*

- Cratering, hypervelocity impact, loose  
sand, experimental studies  
(Braslau, David.) 20 3987  
Experimental studies, thermal  
conductivity, density, basalt, particulate  
[br]  
(Fountain, James A., *et al.*) 20 4063  
Genesis, fission hypothesis, proto-earth,  
spin-up, geochemistry  
(O'Keefe, John A.) 32 6565  
Interior, convection, model  
(Turcotte, D. L., *et al.*) 32 6549  
Interior, electrical conductivity, solar wind  
(Sill, W. R., *et al.*) 1 201  
Interior, mascons  
(Wise, Donald U., *et al.*) 2 261  
Interior, mascons, gravity field  
(Booker, John R., *et al.*) 32 6558  
Interior, mascons, soils, petrology, lunar  
crust  
(Wood, John A.) 32 6497  
Magnetic field, solar wind, Mach cone,  
Explorer 35  
(Whang, Y. C., *et al.*) 31 6002  
Properties, dielectric permittivity,  
dissipation factor, conductivity, Apollo  
11  
(Chung, D. H., *et al.*) 32 6524

- Properties, electrical, magnetic, solar wind  
(Hollweg, Joseph V.) 7 1209
- Properties, heat capacity, thermal  
conductivity, Apollo 11, 10017, 10046  
(Morrison, J. A., *et al.*) 32 6553
- Properties, optical, reflectivity, Apollo 11  
(O'Leary, Brian, *et al.*) 32 6532
- Surface, basalt, petrology, mineralogy,  
petrogenesis, Apollo 11  
(Brown, G. Malcolm.) 32 6480
- Surface, basalt, petrology, petrogenesis,  
lunar origin  
(Ringwood, A. E.) 32 6453
- Surface, control positions, maps, Apollo 8  
(Nance, Richard.) 11 2029
- Surface, crater destruction, size  
distribution, model  
(Marcus, Allan H.) 26 4977
- Surface, craters, erosion  
(Chapman, Clark R., *et al.*) 8 1445
- Surface, differential drift scans, 22  
microns  
(Mendell, W. W., *et al.*) 17 3319
- Surface, erosion, model  
(Soderblom, Laurence A.) 14 2655
- Surface features, elastic properties,  
Surveyor  
(Sutton, George H., *et al.*) 35 7439
- Surface features, glasses, impact origin,  
composition  
(Chao, E. C. T., *et al.*) 35 7445
- Surface features, seismogram, secondary  
ejecta, Apollo 12, LM  
(Chang, G. K., *et al.*) 35 7426
- Surface, geochemistry, alpha-scattering  
technique  
(Economou, Thanasis E., *et al.*) 32 6514
- Surface, infrared spectra, silicates, spectral  
contrast, particle size  
(Logan, Lloyd M., *et al.*) 32 6539
- Surface, infrared survey  
(Murcray, F. H., *et al.*) 14 2662
- Surface, infrared survey, interpretation  
(Salisbury, John W., *et al.*) 14 2671
- Surface, luminescence  
(Snouse, Thomas W., *et al.*) 8 1573
- Surface, petrology, soils, lunar crust,  
mascons  
(Wood, John A.) 32 6497
- Surface, properties, optical, Apollo 11  
(O'Leary, Brian, *et al.*) 32 6532
- Surface, radar reflection  
(Burns, Alan A.) 8 1467
- Surface, regolith, ilmenite basalts,  
petrology, Apollo 11  
(James, Odette B., *et al.*) 29 5793
- Techniques*  
Alpha-scattering, error analysis, Surveyor  
5, Surveyor 6, Surveyor 7  
(Economou, Thanasis E., *et al.*) 32 6514
- Tektites*  
Australia, specific gravity, refractive  
index, composition [l]  
(Scheiber, Leroy C.) 35 7513
- Australites, age  
(Gill, Edmund D.) 5 996
- Australites, age [c]  
(Gill, Edmund D.) 32 6729
- Composition, Australia  
(Leake, Bernard E.) 2 349
- Genesis, microtektite data [c]  
(O'Keefe, John A.) 20 4087
- Thermoluminescence, geochronology  
(Durrani, S. A., *et al.*) 5 983
- Venus*  
Atmosphere, CO<sub>2</sub> formation [l]  
(DeMore, W. B.) 25 4898
- Atmosphere, CO<sub>2</sub> formation [r]  
(Hunten, D. M., *et al.*) 25 4900
- Atmosphere, ionosphere, Mariner 5  
(Whitten, R. C.) 19 3707
- Atmosphere, microwaves  
(de Wolf, David A.) 7 1202
- Atmosphere, pressure, temperature,  
planetary radius  
(Slade, Martin A., *et al.*) 17 3301
- Atmosphere, water, Earth [br]  
(Walker, J. C. G., *et al.*) 18 3558
- Polar regions**  
*Glacial geology*  
Greenland, Jarl-Joset station, ice sheet,  
mass balance [br]  
(Federer, B., *et al.*) 24 4567
- Hydrology*  
Antarctica, Adélie coast, firn snow,  
tritium  
(Ravoire, J., *et al.*) 12 2331
- Antarctica, east, precipitation,  
composition  
(Matveyev, A. A.) 18 3686
- Magnetic surveys*  
Arctic region, Norwegian Sea, Greenland  
Sea  
(Vogt, Peter R., *et al.*) 5 903
- Meteorology*  
Antarctica, temperature, inversions [br]  
(Phillip, H. R., *et al.*) 21 4161
- Arctic region, particles, trace elements,  
metals  
(Egorov, V. V., *et al.*) 18 3650



- Oceanography**  
 Antarctic Ocean, water masses, Indian Ocean, radium [br]  
 (Ku, T. L., *et al.*) 27 5286  
 Antarctic Ocean, water masses, Indian Ocean, radium [d]  
 (Edmond, John M.) 33 6878  
 Arctic Ocean, Amerasian basin, sea water, properties  
 (Kinney, Patrick, *et al.*) 21 4097  
 Sea ice, ice floes, roughness parameter, Arctic [br]  
 (Johannessen, Ola M.) 15 2857
- Seismic surveys**  
 Antarctic region, Ross sea shelf  
 (Houtz, R., *et al.*) 32 6592
- Tectonophysics**  
 Arctic, sea-floor spreading, Alpha cordillera  
 (Vogt, P. R., *et al.*) 26 4925
- Precambrian**  
**Paleomagnetism**  
 North America, Minnesota, Keweenaw intrusive rocks  
 (Beck, Myrl E., Jr.) 26 4985
- Sea water**  
**Composition**  
 Barium, Pacific Ocean, Geosecs, 1969  
 (Wolgemuth, K.) 36 7686  
 Carbon, inorganic, Pacific Ocean, Geosecs, 1969  
 (Kroopnick, P., *et al.*) 36 7668  
 Carbon, radioactive, Pacific Ocean, Geosecs, 1969  
 (Östlund, H. Göte, *et al.*) 36 7667  
 Carbonates, Pacific Ocean, Geosecs, 1969  
 (Takahashi, Taro, *et al.*) 36 7648  
 CO<sub>2</sub>, O<sub>2</sub>, Pacific Ocean, Geosecs, 1969  
 (Craig, H., *et al.*) 36 7641  
 He<sup>3</sup>, excess, Pacific Ocean, Geosecs, 1969  
 (Clarke, W. B., *et al.*) 36 7676  
 Plutonium, Sea of Japan  
 (Miyake, Y., *et al.*) 12 2329  
 Radium, Pacific Ocean, Geosecs, 1969  
 (Broecker, Wallace, *et al.*) 36 7682  
 Radon, Pacific Ocean, Geosecs, 1969  
 (Broecker, Wallace S., *et al.*) 36 7679  
 Trace elements, Pacific Ocean, northeast, Geosecs, 1969  
 (Spencer, Derek W., *et al.*) 36 7688  
 Tritium, Pacific Ocean, Geosecs, 1969  
 (Roether, Wolfgang, *et al.*) 36 7672
- Experimental studies**  
 Optical properties, Atlantic Ocean, north  
 (Morrison, Robert E.) 3 612
- Geochemistry**  
 Carbon-13, abyssal, Pacific Ocean, south [br]  
 (Craig, H.) 3 691  
 Oxygen, nutrients, Arctic Ocean  
 (Kinney, Patrick, *et al.*) 21 4097
- Processes**  
 Bubbles, coastal waters  
 (Medwin, Herman.) 3 599  
 Diffusion, Pacific Ocean, Kauai channel  
 (Schuert, Edward A.) 3 673  
 Evaporation, hurricanes, Faith, 1966  
 (Östlund, H. Göte.) 12 2303  
 Ice formation, salt rejection  
 (Lake, R. A., *et al.*) 3 583
- Properties**  
 Density, temperature, salinity [br]  
 (Weyl, Peter K.) 12 2209  
 Hydrosols, optical methods, particle size  
 (Beardsley, George F., Jr., *et al.*) 15 2837  
 Paleotemperatures [br]  
 (Sackett, William M., *et al.*) 24 4557  
 Plume region, Columbia river [br]  
 (Pak, Hasong, *et al.*) 24 4570  
 Salinity, Gulf of Mexico, Mississippi river  
 (Droppleman, J. D., *et al.*) 30 5909  
 Temperature, Bermuda, thermocline, permanent  
 (Wunsch, Carl, *et al.*) 30 5899
- Temperature**  
 Pacific Ocean, north  
 (Namias, Jerome.) 3 565  
 Radiation thermometry, airborne, corrections  
 (Saunders, Peter M.) 36 7596
- Sea-floor spreading**  
**Arctic Ocean**  
 Greenland Sea, Norwegian Sea, magnetic surveys  
 (Vogt, Peter R., *et al.*) 5 903
- Atlantic Ocean**  
 Triassic period, magnetic smooth zones  
 (Vogt, P. R., *et al.*) 20 3955
- General**  
 Earthquakes, swarms, East Pacific Rise, Mid-Atlantic ridge  
 (Sykes, Lynn R.) 32 6598  
 Pangaea, Paleozoic, Mesozoic, Cenozoic  
 (Dietz, Robert S., *et al.*) 26 4939
- Indian Ocean**  
 Afar, Red Sea, Gulf of Aden  
 (Mohr, P. A.) 35 7340
- Mechanism**  
 Convection, mantle, nonlinear effects [I]  
 (Rice, Alan.) 2 491  
 Upper mantle instability, plate tectonics  
 (Jacoby, Wolfgang R.) 29 5671

- Pacific Ocean*  
 East Pacific rise, seismicity  
 (Northrop, John, *et al.*) 17 3285  
 North, fracture zones  
 (Rea, David K.) 8 1421  
 Paleomagnetic stratigraphy  
 (Foster, John H., *et al.*) 23 4465  
 Regional, paleomagnetism  
 (Francheteau, Jean, *et al.*) 11 2035  
 Solomon islands, Woodlark basin  
 (Milsom, J. S.) 35 7335
- Processes*  
 Mountain building, plate tectonics  
 (Dewey, John F., *et al.*) 14 2625
- Theoretical studies*  
 Rates, heat generation  
 (Minear, John W., *et al.*) 8 1397
- Sedimentary rocks**  
*Novaculite*  
 Physical properties, Hugoniot, release  
 adiabat  
 (Petersen, Carl F., *et al.*) 11 2063
- Sedimentation**  
*Currents*  
 Longshore, sand transport  
 (Komar, Paul D., *et al.*) 30 5914
- Eolian transport*  
 Pacific Ocean, north, clay minerals [br]  
 (Ferguson, William S., *et al.*) 6 1137
- Experimental studies*  
 Turbulent diffusion  
 (Murray, Stephen P.) 9 1647
- Ocean-currents*  
 Atlantic Ocean, north, Blake outer ridge,  
 hydrodynamic model  
 (Bryan, George M.) 24 4530  
 Atlantic Ocean, north, Labrador Sea,  
 Norwegian Sea  
 (Jones, E. J. W., *et al.*) 9 1655
- Theoretical studies*  
 Sand beds, shear flow, low Froude number  
 (Smith, J. Dungan.) 30 5928
- Sediments**  
*General*  
 Pacific Ocean, Coral Sea  
 (Ewing, John I., *et al.*) 11 1963
- Physical properties*  
 Pacific Ocean, compressional waves,  
 velocities  
 (Hamilton, Edwin L.) 23 4423  
 Playa alluvium, Hugoniot, release adiabat  
 (Petersen, Carl F., *et al.*) 11 2063
- Spherules*  
 Mineral composition, red clay, Pacific  
 Ocean  
 (Millard, H. T., Jr., *et al.*) 11 2125
- Seismic methods**  
*Instruments*  
 Quartz accelerometer, wide-band  
 frequency response  
 (Block, Barry, *et al.*) 8 1493
- Techniques*  
 Focal depth, surface waves, amplitude  
 spectra  
 (Tsai, Yi-Ben, *et al.*) 29 5729  
 Inversion, group velocity, phase velocity  
 [br]  
 (Pilant, W. L., *et al.*) 11 2135  
 Love waves, finite difference  
 approximation  
 (Boore, David M.) 8 1512  
 Plane compressional waves, Voigt  
 medium, nuclear explosions  
 (Jaramillo, Eugene E., *et al.*) 29 5767  
 Ray tracing, Fermat's principle, major  
 tectonic features  
 (Jacob, Klaus H.) 32 6675  
 Refraction, velocities, variance, dipping  
 layer  
 (Dowling, John J.) 32 6690  
 Seismic displacements, representation  
 theorem, derivation  
 (Gangi, Anthony F.) 11 2088  
 SH-waves, irregular interfaces,  
 Mohorovičić discontinuity  
 (Aki, Keiiti, *et al.*) 5 933  
 Strain meters, confined fluids  
 (Bodvarsson, Gunnar.) 14 2711
- Theoretical studies*  
 Representation theorem, derivation,  
 seismic displacements  
 (Gangi, Anthony F.) 11 2088
- Seismic surveys**  
*Alaska*  
 Katmai National Monument, refraction  
 (Gedney, Larry, *et al.*) 14 2619
- Antarctica*  
 Ross sea shelf  
 (Houtz, R., *et al.*) 32 6592
- Atlantic Ocean*  
 Antilles, Barbados, thrust faults, reflection  
 profiles [d]  
 (Scholl, David W., *et al.*) 2 488  
 Canary islands, refraction  
 (Bosshard, E., *et al.*) 26 4901  
 Horizon A, Eocene  
 (Ewing, J., *et al.*) 29 5645  
 North, Blake-Bahama outer ridge,  
 reflection  
 (Markl, R. G., *et al.*) 24 4539  
 North, Labrador Sea, Norwegian Sea,  
 sedimentation  
 (Jones, E. J. W., *et al.*) 9 1655

*Canada*

- Alberta, reflecting horizons, crust,  
anisotropy  
(Clowes, R. M., *et al.*) 32 6693

*New Zealand*

- North Island, mantle, inhomogeneity  
(Mooney, Harold M.) 2 285

*North America*

- California, Mono basin [d]  
(Pakiser, L. C.) 20 4077  
California, Mono basin [r]  
(Christensen, M. N., *et al.*) 20 4081  
California, Mono basin [r]  
(Pakiser, L. C.) 20 4083  
Minnesota, Wisconsin, refraction, gravity  
high  
(Mooney, Harold M., *et al.*) 26 5056

*Pacific Ocean*

- Coral Sea, refraction  
(Ewing, Maurice, *et al.*) 11 1953  
Coral Sea, sediments  
(Ewing, John I., *et al.*) 11 1963  
North, equatorial, sonobuoy stations  
(Houtz, R., *et al.*) 26 5093

**Seismology***Crustal structure*

- Gulf of Mexico, P-waves, traveltimes,  
velocity increase  
(Hales, A. L., *et al.*) 35 7362  
Horizon A, Eocene  
(Ewing, J., *et al.*) 29 5645  
Indian Ocean, seismicity, island arcs,  
nascent  
(Sykes, Lynn R.) 26 5041  
Mediterranean, plate tectonics, uplift  
(Caputo, M., *et al.*) 26 4919  
Models, Earth, regional, Monte Carlo  
inversion  
(Press, Frank.) 32 6575

*Earthquake prediction*

- Alaska, space-time seismicity  
(Kelleher, John A.) 29 5745  
California, faults, creep, strain  
(Scholz, C. H., *et al.*) 23 4447

*Elastic waves*

- Body waves, ray tracing, island arcs  
(Jacob, Klaus H.) 32 6675  
Body waves, focal mechanism solutions  
(Chandra, Umesh.) 17 3411  
Body waves, island arcs, heat generation  
(Minear, John W., *et al.*) 8 1397  
Body waves, magnitude, focal mechanism  
(Chandra, Umesh.) 17 3421  
Body waves, mantle, densities,  
composition, iron  
(Wang, Chi-yuen.) 17 3264

- Body waves, seismic parameter,  
Murnaghan equation, Birch equation  
(Chung, D. H., *et al.*) 26 5113  
Compressional waves, velocities, fayalite,  
Fe<sub>2</sub>SiO<sub>4</sub> spinel, coesite, quartz  
(Mizutani, H., *et al.*) 14 2741  
Compressional waves, shear waves,  
velocities, theoretical study [br]  
(Sammis, Charles, *et al.*) 23 4478  
Compressional waves, shear waves,  
velocities, olivine, iron/magnesium ratio  
(Chung, D. H.) 35 7353  
Compressional waves, velocities, basalt,  
Pacific Ocean [br]  
(Christensen, Nikolas I.) 14 2773  
Compressional waves, velocities,  
sediments, Pacific Ocean  
(Hamilton, Edwin L.) 23 4423  
Debye temperature, thermal conductivity,  
silicates  
(Horai, Ki-iti, *et al.*) 5 978  
Experimental studies, Mg<sub>2</sub>SiO<sub>4</sub>-Fe<sub>2</sub>SiO<sub>4</sub>,  
velocity, density  
(Liebermann, Robert C.) 20 4029  
Free oscillations, toroidal mode  
(Randall, M. J.) 8 1571  
Free oscillations, torsional mode, phase  
function approach [br]  
(Carr, Russell E.) 2 485  
General, compressional velocity, density  
[l]  
(Anderson, Don L.) 8 1623  
Love waves, nonuniform wave guides  
(Boore, David M.) 8 1512  
Love waves, long period [l]  
(Knopoff, L., *et al.*) 20 4084  
Rayleigh waves, wedges, photoelastic  
analysis  
(Lewis, D., *et al.*) 17 338  
SH-waves, irregular interfaces,  
Mohorovičić discontinuity  
(Aki, Keiiti, *et al.*) 5 933  
Surface waves, focal depth, amplitude  
spectra, techniques  
(Tsai, Yi-Ben, *et al.*) 29 5729  
Surface waves, focal mechanism, Alaska,  
March 1964  
(Kanamori, Hiroo.) 26 5029  
Surface waves, long period, synthetic  
(Kanamori, Hiroo.) 26 5011  
Surface waves, observational errors  
(Der, Z., *et al.*) 17 3399  
Surface waves, Rayleigh, spectra,  
earthquakes, explosions, discrimination  
(Von Seggern, David, *et al.*) 35 7382  
Velocities, composition, densities [br]  
(Mao, Nai-hsien, *et al.*) 20 4071

- Velocities, compressional waves, shear waves, marine sediments  
(Hamilton, E. L., *et al.*) 20 4039
- Velocities, Pacific Ocean, sonobuoy stations  
(Houtz, R., *et al.*) 26 5093
- Experimental studies*
  - Seismic-energy release, microfractures, thermoelastic stresses  
(Warren, Nicholas W., *et al.*) 23 4455
- General*
  - Earthquakes, Chandler wobble, wobble excitation  
(Myerson, Robert J.) 32 6612
- Interior structure*
  - Experimental studies, seismic parameter, Murnaghan equation, Birch equation  
(Chung, D. H., *et al.*) 26 5113
  - Mantle, discontinuities  
(Whitcomb, James H., *et al.*) 29 5713
  - Mantle, iron, petrological models  
(Wang, Chi-yuen.) 17 3264
  - Models, Earth, regional, Monte Carlo inversion  
(Press, Frank.) 32 6575
- Seismic sources*
  - Earthquakes, Alaska, March 1964, focal mechanisms, surface waves  
(Kanamori, Hiroo.) 26 5029
  - Earthquakes, Chandler wobble, wobble excitation  
(Myerson, Robert J.) 32 6612
  - Earthquakes, Indonesia, Philippine islands  
(Fitch, Thomas J., *et al.*) 8 1431
  - Earthquakes, Kyushu, Japan, 1963, fault length, fracture velocity  
(Bollinger, G. A.) 5 955
  - Earthquakes, mechanisms, tectonics, Asia  
(Fitch, Thomas J.) 14 2699
  - Earthquakes, South America, stress estimates  
(Wyss, Max.) 8 1529
  - Earthquakes, stress, shear waves, spectra, model  
(Brune, James N.) 26 4997
  - Earthquakes, swarms, sea-floor spreading  
(Sykes, Lynn R.) 32 6598
  - Explosives, elastic strain waves [d]  
(Clark, George B., *et al.*) 26 5138
  - Explosives, yield, magnitude [l]  
(Evernden, J. F.) 5 1028
  - Focal mechanism solutions, body waves  
(Chandra, Umesh.) 17 3411
  - Mechanism, deep earthquakes  
(Knopoff, L., *et al.*) 26 4957
  - Mechanism, deep earthquakes, linear vector dipole  
(Randall, M. J., *et al.*) 26 4965
  - Nuclear explosions, Benham, aftershock sequence  
(Basham, P. W., *et al.*) 8 1545
  - Nuclear explosions, medium response, plane compressional waves, Voigt medium, model  
(Jaramillo, Eugene E., *et al.*) 29 5767
  - Pacific Ocean, Kuril islands, October 1963  
(Kanamori, Hiroo.) 26 5011
  - Rayleigh waves, spectra, earthquakes, explosions, discrimination  
(Von Seggern, David, *et al.*) 35 7382
  - Sonic booms  
(Goforth, Tom T., *et al.*) 26 5087
- Techniques*
  - Time-domain approach, P-waves, fault length, fracture velocity  
(Bollinger, G. A.) 5 955
- Tsunamis*
  - Model, Good Friday earthquake, Alaska, 1964  
(Hwang, Li-San, *et al.*) 33 6802
- Solar wind*
  - Interplanetary space*
    - Comets, type 1, experimental studies. [l]  
(Kubo, Haruya, *et al.*) 10 1937
    - Electric fields, electromagnetic waves  
(Scarf, F. L., *et al.*) 19 3735
    - Electric fields, electron temperatures  
(Hollweg, Joseph V.) 13 2403
    - Electric fields, electrons, 40 kev [br]  
(Lin, R. P.) 13 2583
    - Electric fields, magnetic tail, Pioneer 8  
(Scarf, F. L., *et al.*) 16 3167
    - Electric fields, thin current sheets, bow shock waves, stationary waves  
(Perez, J. K., *et al.*) 31 6011
    - Hydrogen, large fluxes, 1 kev, 800 km [l]  
(Wax, R. L., *et al.*) 31 6390
    - Magnetic fields, bow shock waves, stationary waves  
(Perez, J. K., *et al.*) 31 6011
    - Magnetic fields, dominant polarity, Sun [l]  
(Wilcox, John M.) 13 2587
    - Magnetic fields, electromagnetic radiation  
(Scarf, F. L., *et al.*) 19 3735
    - Magnetic fields, Parker spiral model  
(Rosenberg, Ronald L.) 28 5310
    - Moon, Mach cone, Explorer 35  
(Whang, Y. C., *et al.*) 31 6002
    - Particles, electrons, 40 kev [br]  
(Lin, R. P.) 13 2583
    - Particles, helium  
(Robbins, D. E., *et al.*) 7 1178
    - Particles, protons  
(Hundhausen, A. J., *et al.*) 25 4643
    - Particles, protons, alpha particles,  $Z \geq 3$  nuclei, particle acceleration, shock



- waves  
(Armstrong, T. P., *et al.*) 31 5980
- Particles, protons, low energy  
(Frank, L. A.) 4 707
- Particles, protons, suprathermal, waves,  
large-amplitude [I]  
(Scarf, F. L., *et al.*) 34 7316
- Plasma, anisotropy, flares, convection  
(Forman, Miriam A.) 16 3147
- Plasma, collisionless  
(Hollweg, Joseph V.) 13 2403
- Plasma, composition, He, Ne, Apollo 11,  
Apollo 12  
(Geiss, J., *et al.*) 31 5972
- Plasma, deviations, Parker spiral model  
(Rosenberg, Ronald L.) 28 5310
- Plasma, flares, helium, shock waves  
(Hirshberg, J., *et al.*) 1 1
- Plasma, flares, shock waves, Pioneer 6  
(Landt, Jeremy A., *et al.*) 25 4623
- Plasma, flares, Vela 3, Vela 4  
(Hundhausen, A. J., *et al.*) 25 4631
- Plasma, heat conduction  
(Forslund, D. W.) 1 17
- Plasma, instabilities, proton anisotropy  
(Hollweg, Joseph V., *et al.*) 28 5297
- Plasma, ions, composition, abundance [I]  
(Lange, J., *et al.*) 31 6350
- Plasma, ions, composition, abundance, [I]  
(Bame, S. J., *et al.*) 31 6360
- Plasma, ions, composition [I]  
(Holzer, T. E., *et al.*) 31 6354
- Plasma, lunar wake [d]  
(Michel, F. C.) 1 233
- Plasma, lunar wake [r]  
(Ogilvie, K. W., *et al.*) 1 234
- Plasma, model  
(Weber, E. J., *et al.*) 13 2419
- Plasma, moon, properties  
(Sill, W. R., *et al.*) 1 201
- Plasma, Moon, shock waves  
(Hollweg, Joseph V.) 7 1209
- Plasma, positive ion deceleration  
(Neugebauer, Marcia.) 4 717
- Plasma, shock waves, bow shock waves  
[c]  
(Fairfield, D. H.) 28 5644
- Plasma, shock waves [I]  
(Chao, Jih Kwin, *et al.*) 31 6394
- Plasma, shock waves, turbulent structure,  
high- $\beta$  plasma  
(Coroniti, F. V.) 34 7007
- Plasma, structure, model  
(Siscoe, G. L., *et al.*) 10 1817
- Plasma, turbulence  
(Hollweg, Joseph V.) 19 3715
- Termination, interstellar neutral hydrogen  
(Semar, Cary Lloyd.) 34 6892
- Magnetosphere*  
Bow shock waves, microstructure,  
magnetic field fluctuations  
(Mariani, F., *et al.*) 31 6037
- Bow shock waves, positive ion  
deceleration  
(Neugebauer, Marcia.) 4 717
- Bow shock waves, proton fluxes,  
spectrometer, OGO 5  
(Ossakow, S. L., *et al.*) 31 6024
- Bow shock waves, solar maximum, 1969,  
Heos 1  
(Egidi, A., *et al.*) 34 6999
- Bow shock waves, turbulence,  
electrostatic, OGO 5  
(Fredricks, R. W., *et al.*) 19 3751
- Bow shock waves, turbulent structure,  
perpendicular fast shocks, high- $\beta$   
plasma  
(Coroniti, F. V.) 34 7007
- Configuration, polar substorms [br]  
(Meng, C. I.) 16 3252
- Electric fields, thin current sheets,  
stationary waves  
(Perez, J. K., *et al.*) 31 6011
- Geomagnetic index, real time [I]  
(Joselyn, Jo Ann.) 14 2777
- Magnetic storms, Explorer 26, 1965  
(Cahill, Laurence J., Jr.) 19 3778
- Magnetic storms, trapped particles,  
protons, low energy  
(Frank, L. A.) 4 707
- Magnetic tail, electric fields, Pioneer 8  
(Scarf, F. L., *et al.*) 16 3167
- Magnetic tail, geometry, Explorer 35  
(Behannon, Kenneth W.) 4 743
- Magnetic tail, hydromagnetic oscillations  
(McKenzie, J. F.) 28 5331
- Magnetic tail, magnetic wake 500  $R_E$   
(Siscoe, G. L., *et al.*) 28 5319
- Magnetopause, solar maximum, 1969,  
Heos 1  
(Egidi, A., *et al.*) 34 6999
- Magnetopause, substorms, polar [br]  
(Meng, C. I.) 16 3252
- Magnetosheath, magnetic field  
fluctuations, Imp 4  
(Fairfield, Donald H., *et al.*) 31 6050
- Magnetosheath, rotational Alfvén waves,  
magnetoacoustic waves, bow shock  
(Kaufmann, Richard L., *et al.*) 25 4666
- Plasma instabilities, ionosphere,  
temperature variations [br]  
(Jacchia, Luigi G.) 22 4347
- Plasma instabilities, plasmasphere, bulge,  
whistlers  
(Carpenter, D. L.) 19 3837

**Observations**

- Composition, He, Ne, isotopes, Apollo 11,  
Apollo 12  
(Geiss, J., *et al.*) 31 5972
- Electromagnetic radiation, OGO 5  
(Scarf, F. L., *et al.*) 19 3735
- Magnetic tail, 500 R<sub>E</sub>  
(Siscoe, G. L., *et al.*) 28 5319
- Protons, July 1965, June 1967, Vela 3  
(Hundhausen, A. J., *et al.*) 25 4643
- Shock waves, Explorer 33, Explorer 35  
(Armstrong, T. P., *et al.*) 31 5980
- Shock waves, flares, He-enriched driver  
gas  
(Hirshberg, J., *et al.*) 1 1
- Shock waves, July 7, 1966, Pioneer 6  
(Landt, Jeremy A., *et al.*) 25 4623
- Shock waves, Mariner 5 [l]  
(Chao, Jih Kwin, *et al.*) 31 6394

**Theoretical studies**

- Collisionless, electron temperatures  
(Hollweg, Joseph V.) 13 2403
- Diffusion, corona, heavy ions  
(Allouche, Y.) 34 6899
- Flow, viscous model [br]  
(Dahlberg, E.) 31 6312
- Model, viscosity, anisotropy  
(Weber, E. J., *et al.*) 13 2419
- Polytrope equations, explicate solution  
[br]  
(Yeh, Tyan.) 31 6309
- Structure, coronal inhomogeneities  
(Siscoe, G. L., *et al.*) 10 1817
- Termination, interstellar neutral hydrogen  
(Semar, Cary Lloyd.) 34 6892
- Two fluid model, nonthermal heating  
(Hartle, R. E., *et al.*) 34 6915

**South America****Earthquakes**

- Trench system  
(Wyss, Max.) 8 1529

**Petrology**

- Guyana, petrogenesis, Sr-87/Sr-86  
(Sponner, C. M., *et al.*) 32 6706

**Stratigraphy**

- Argentina, continental margins, basins  
(Zambrano, J. J., *et al.*) 8 1363

**Structural geology**

- Argentina, continental margins, basins  
(Zambrano, J. J., *et al.*) 8 1363

**Southern hemisphere****Meteorology**

- Aerosol, stratosphere, Agung volcano  
(Volz, Frederic E.) 27 5185

**Spectroscopy****Absorption**

- Molecular oxygen concentrations,  
ionosphere  
(Quesette, Jacques Alain.) 4 839

**Infrared**

- Emission, remote sensing, surface films  
[br]  
(Watson, Robert D.) 2 480
- Minerals, radiative heat  
(Shankland, T. J.) 2 409

**Tectonophysics****Continental drift**

- Convective currents, nonlinear effects [l]  
(Rice, Alan.) 2 491
- Global, plate tectonics, model [c]  
(Le Pichon, Xavier.) 14 2793
- Gondwanaland, ice cap, sea-floor  
spreading [br]  
(Gough, D. I.) 23 4475
- Indian Ocean, seismicity, island arcs,  
nascent  
(Sykes, Lynn R.) 26 5041
- Mechanism  
(Jacoby, Wolfgang R.) 29 5671
- Pangaea  
(Dietz, Robert S., *et al.*) 26 4939
- Polar wandering [d]  
(Francheteau, Jean, *et al.*) 5 1023
- Polar wandering, [r]  
(Irving, E., *et al.*) 5 1027

**Convection currents**

- Mechanism  
(Jacoby, Wolfgang R.) 29 5671
- Nonlinear effects, continental drift [l]  
(Rice, Alan.) 2 491
- Transform faults, Coriolis force [br]  
(Howell, B. F., Jr.) 14 2769
- Variable viscosity, mantle  
(Takeuchi, H., *et al.*) 5 921

**Crustal structure**

- Antarctica, Ross sea shelf  
(Houtz, R., *et al.*) 32 6592
- Atlantic Ocean, Canary islands  
(Bosshard, E., *et al.*) 26 4901
- Benioff zones, California  
(Ernst, W. G.) 5 886
- California, San Andreas fault [d]  
(Byerlee, James D.) 2 499
- Faults, Asia, central, earthquakes  
(Fitch, Thomas J.) 14 2699
- Iceland, faults, earthquakes, precision  
leveling  
(Tryggvason, Eysteinn.) 23 4407
- Illinois, gravity field  
(McGinnis, L. D.) 2 317

- Indian Ocean, seismicity, island arcs,  
nascent  
(Sykes, Lynn R.) 26 5041
- Island arcs, evolution, Pacific Ocean,  
Tonga-Kermadec system  
(Karig, Daniel E.) 2 239
- Island arcs, Indonesia, Philippine islands,  
earthquakes  
(Fitch, Thomas J., *et al.*) 8 1431
- Island arcs, thrust faults, gravity faults,  
mechanism  
(Malahoff, Alexander.) 11 1992
- Mantle, phase changes, vertical, tectonics  
(Magnitsky, V. A., *et al.*) 5 877
- Mediterranean region, plate tectonics,  
uplift, seismicity  
(Caputo, M., *et al.*) 26 4919
- Orogenesis, plate tectonics, Wegmann  
model, Dewey-Bird model, [br]  
(Griffin, Villard S., Jr.) 35 7504
- Orogeny, mechanism [br]  
(Elsasser, Walter M.) 8 1615
- Orogeny, plate tectonics  
(Dewey, John F., *et al.*) 14 2625
- Pacific Ocean, Coral Sea  
(Ewing, Maurice, *et al.*) 11 1953
- Properties, flexural rigidity, thickness,  
viscosity, North America, Pacific Ocean  
(Walcott, R. I.) 20 3941
- Rift zones, fracture zones, mid-ocean  
ridges  
(Sleep, Norman H., *et al.*) 14 2748
- Static deformation, internal sources,  
model  
(Singh, Sarva Jit.) 17 3257
- Uplift, Deccan traps, Amarkantak, India,  
paleomagnetism  
(Athavale, R. N.) 20 4000
- Heat flow*
- Atlantic Ocean, Caribbean sea,  
Mid-Atlantic ridge  
(Von Herzen, R. P., *et al.*) 11 1973
- Caribbean sea, Gulf of Mexico  
(Epp, David, *et al.*) 29 5655
- Conductivity, Debye temperature,  
seismology  
(Horai, Ki-iti, *et al.*) 5 978
- Experimental study, radiative thermal  
conductivity, infrared spectra  
(Aronson, J. R., *et al.*) 17 3443
- Heat sources, island arcs, spreading rates  
(Minear, John W., *et al.*) 8 1397
- Heat sources, prebatholithic rocks,  
California, Sierra Nevada  
(Wollenberg, Harold A., *et al.*) 2 431
- Instruments, thermal conductivity,  
continuous measurement, drill hole  
(Costain, John K.) 20 3969
- Interpretation, surface effects,  
conductivity, geothermal gradient  
(Horai, Ki-iti, *et al.*) 11 1985
- New Zealand, North Island  
(Hatherton, Trevor.) 2 269
- Pacific Ocean, Hawaiian arch  
(Sclater, J. G., *et al.*) 2 333
- Pacific region, Juan de Fuca ridge  
(Lister, C. R. B.) 14 2648
- Philippine islands, Mindanao island,  
Alaska, Amchitka island  
(Sass, J. H., *et al.*) 23 4387
- Plutons, heat production  
(Lachenbruch, Arthur H.) 17 3291
- Radiative heat, conductivity  
(Shankland, T. J.) 2 409
- Thermal structure, Iceland,  
magnetotelluric data, seismic data  
(Hermance, J. F., *et al.*) 32 6582
- Sea-floor spreading*
- Arctic region, Alpha cordillera  
(Vogt, P. R., *et al.*) 26 4925
- Arctic region, Iceland  
(Vogt, Peter R., *et al.*) 5 903
- Convection currents, Coriolis force [br]  
(Howell, B. F., Jr.) 14 2769
- Earthquakes, swarms, ridge crests  
(Sykes, Lynn R.) 32 6598
- Global, plate tectonics, model [c]  
(Le Pichon, Xavier.) 14 2793
- Gondwanaland, ice cap [br]  
(Gough, D. I.) 23 4475
- Indian Ocean, Afar, Red Sea, Gulf of  
Aden  
(Mohr, P. A.) 35 7340
- Indian Ocean, seismicity, island arcs,  
nascent  
(Sykes, Lynn R.) 26 5041
- Mechanism  
(Jacoby, Wolfgang R.) 29 5671
- North Atlantic, magnetic smooth zones,  
Triassic period  
(Vogt, P. R., *et al.*) 20 3955
- Pacific Ocean  
(Francheteau, Jean, *et al.*) 11 2035
- Pacific Ocean, eastern Pacific rise  
(Northrop, John, *et al.*) 17 3285
- Pacific Ocean, Solomon islands, Woodlark  
basin  
(Millsom, J. S.) 35 7335
- Pangaea  
(Dietz, Robert S., *et al.*) 26 4939
- Plate tectonics, orogenesis, Wegmann  
model, Dewey-Bird model [br]  
(Griffin, Villard S., Jr.) 35 7504
- Polar wandering [d]  
(Francheteau, Jean, *et al.*) 5 1023

- Polar wandering [r]  
 (Irving, E., *et al.*) 5 1027
- Rates, heat generation  
 (Minear, John W., *et al.*) 8 1397
- Rift zones, fracture zones, mid-ocean  
 ridges  
 (Sleep, Norman H., *et al.*) 14 2748
- Trace-element analyses**  
*Aerosol particles*  
 Illinois, Chicago  
 (Brar, S. S., *et al.*) 15 2939
- Atmosphere*  
 Troposphere, 37°N, 46°N, spectroscopy  
 (Rancitelli, L. A., *et al.*) 15 3055
- Tektites**  
*Absolute age*  
 Australia  
 (Gill, Edmund D.) 5 996  
 Australia [c]  
 (Gill, Edmund D.) 32 6729  
 Thermoluminescence  
 (Durrani, S. A., *et al.*) 5 983
- Composition*  
 Australia  
 (Leake, Bernard E.) 2 349  
 Australia, specific gravity, refractive  
 index [l]  
 (Scheiber, Leroy C.) 35 7513
- Genesis*  
 Microtektite data [c]  
 (O'Keefe, John A.) 20 4087
- USSR**  
*Hydrology*  
 Concentrations, trace elements, Mn, Ni,  
 Pb, Fe  
 (Drozdova, V. M., *et al.*) 18 3610
- Meteorology*  
 Aerosols, radioactive, Rn<sup>222</sup>  
 (Nazarov, L. E., *et al.*) 18 3575  
 Aerosols, residence time  
 (Leipunskiy, O. I., *et al.*) 18 3569  
 Exhalation, Rn<sup>222</sup>  
 (Kirichenko, L. V.) 18 3639  
 Particles, trace elements, metals  
 (Egorov, V. V., *et al.*) 18 3650  
 Precipitation, composition  
 (Petrenchuk, O. P., *et al.*) 18 3629
- Venus**  
*Atmosphere*  
 Absorption, scattering, microwaves  
 (de Wolf, David A.) 7 1202  
 CO<sub>2</sub> formation [l]  
 (DeMore, W. B.) 25 4898  
 CO<sub>2</sub> formation [r]  
 (Hunten, D. M., *et al.*) 25 4900  
 Ionosphere, Mariner 5  
 (Whitten, R. C.) 19 3707  
 Pressure, temperature, planetary radius  
 (Slade, Martin A., *et al.*) 17 3301  
 Water, hydrogen, Mariner 5 [br]  
 (Walker, J. C. G., *et al.*) 18 3558
- Volcanism**  
*General*  
 New Zealand, mantle  
 (Hatherton, Trevor.) 2 269
- Volcanoes**  
*Pacific Ocean*  
 Mariana islands, sofar hydrophone  
 network [l]  
 (Norris, Roger A., *et al.*) 11 2144
- Volcanology**  
*Theoretical studies*  
 Magmas, genesis  
 (Ida, Yoshiaki.) 20 4051





## AUTHOR INDEX

<b>Adams, G. W.</b> Observations of $O_2(^1\Delta_g)$ in the atmosphere and allowable values of the eddy diffusion coefficient	31 6398
<b>Adams, Robert M.</b> A laser profilometer	12 2185
<b>Adelfang, S. I.</b> Amplitude of the annual temperature cycle in the stratosphere	27 5259
<b>Adelfang, Stanley I.</b> Standard deviation of turbulence velocity components over flat arid terrain	33 6864
<b>Adroguer, B.</b> Vertical distribution of radon 222 in the atmosphere and its use for study of exchange in the lower troposphere	12 2373
<b>Agarwal, R. G.</b> Analysis of combined gravity and magnetic fields in wave number domain	29 5702
<b>Agrawal, S. P.</b> Semi-diurnal anisotropy of cosmic radiation in the energy range 1 to 200 Gev	13 2391
<b>Ahlquist, Norman.</b> The integrating nephelometer as an instrument for studying atmospheric aerosols	15 3146
<b>Ahrens, Thomas J.</b> A proposed equation of state of stishovite	2 310
<b>Akasofu, S. I.</b> Poleward expansion of the auroral oval and associated phenomena in the magnetotail during auroral substorms, 1	34 7060
<b>Akasofu, S. I.</b> On the continuity of the auroral oval	34 7147
<b>Akasofu, S. I.</b> Simultaneous observations of an energetic electron event in the magnetotail by the Vela 3A and Imp 3 satellites, 1	34 7294
<b>Akasofu, S. I.</b> Simultaneous observations of an energetic electron event in the magnetotail by the Vela 3A and Imp 3 satellites, 2	34 7296
<b>Aki, Keiiti</b> Surface motion of a layered medium having an irregular interface due to incident plane SH waves	5 933
<b>Aki, Keiiti.</b> Precise focal depth determination from amplitude spectra of surface waves	29 5729
<b>Akimoto, S.</b> Compressional-wave velocities of fayalite, $Fe_2SiO_4$ spinel, and coesite	14 2741
<b>Albee, Paul R.</b> Aspect sensitivity of F-layer HF backscatter echoes	1 165
<b>Albrecht, B.</b> Studies of atmospheric $N_2O$	12 2230
<b>Alcayde, D.</b> Diurnal variations of the atomic oxygen density and temperature determined from incoherent scatter measurements in the ionospheric F region	25 4825
<b>Alksne, A.</b> Observation of a solar flare induced interplanetary shock and helium-enriched driver gas	1 1
<b>Allcock, G. McK.</b> Dynamic spectral characteristics of chorus at a middle-latitude station	13 2503
<b>Allredge, L. R.</b> Reply, "Dipole model of the sources of the Earth's magnetic field and secular change" (see original Vol. 74, No. 27, p. 6583-6593)	32 6725
<b>Allen, E. R.</b> Chemical factors regulating free alkali metal atoms in the upper atmosphere	15 2947
<b>Allouche, Y.</b> Diffusion of heavy ions in the solar corona	34 6899
<b>Alsop, L. E.</b> A property of long-period Love waves	20 4084
<b>Anderson, C. N.</b> North Atlantic magnetic smooth zones	20 3955
<b>Anderson, C. W., III</b> Development of a polar magnetic substorm current system	31 6318
<b>Anderson, Don</b> Application of isotropic finite strain theory to ultrasonic and seismological data	23 4478
<b>Anderson, Don L.</b> Velocity-density relations	8 1623
<b>Anderson, Don L.</b> The bulk modulus-volume relationship for oxides	17 3494

- Anderson, Don L.** Reflection of P'P' seismic waves from discontinuities in the mantle 29 5713
- Anderson, Don L.** Correction to paper by D. L. Anderson and O. L. Anderson, "The modulus-volume relationship for oxides" (see original Vol. 75, No. 17, p. 3494-3500) 26 5141
- Anderson, Donald E., Jr.** Mariner 5 measurement of the Earth's Lyman alpha emission 19 3769
- Anderson, Donald L.** Lunar luminescence and neutral particles 8 1573
- Anderson, F. J.** Interaction of a thunderstorm with a conducting atmosphere; reply (see original Vol. 74, No. 23, p. 5390-5396) 9 1699
- Anderson, F. J.** Discharges from a large positively stressed electrode 36 7531
- Anderson, H. R.** Détection of geomagnetically aligned currents associated with an auroral arc 13 2595
- Anderson, K. A.** A layer of energetic electrons ( $>40$  kev) near the magnetopause 10 1827
- Anderson, K. A.** Method to determine sense and magnitude of electric field from lunar particle shadows 13 2591
- Anderson, Orson L.** Elastic constants of the central force model for three cubic structures; pressure derivatives and equations of state 14 2719
- Anderson, Orson L.** The bulk modulus-volume relationship for oxides 17 3494
- Anderson, Orson L.** Correction to paper by D. L. Anderson and O. L. Anderson, "The modulus-volume relationship for oxides" (see original Vol. 75, No. 17, p. 3494-3500) 26 5141
- Anderssen, R. S.** On the smoothing and spherical harmonic analysis of the storm of September 25, 1958 13 2569
- Andreasen, Gordon E.** Magnetic anomalies from satellite magnetometer 20 4007
- Angell, J. K.** Quasi-biennial, annual, and semiannual zonal wind and temperature harmonic amplitudes and phases in the stratosphere and low mesosphere of the northern hemisphere 3 543
- Angerami, Jacyntho J.** Whistler duct properties deduced from VLF observations made with the Ogo 3 satellite near the magnetic equator 31 6115
- Anglin, F. M.** An analysis of the "Benham" aftershock sequence using Canadian recordings 8 1545
- Anýž, F.** Simple method of membrane filter processing 12 2299
- Arhelger, Martin E.** Chemical characteristics of water masses in the Amerasian basin of the Arctic Ocean 21 4097
- Armstrong, J. C.** Time history of the inner radiation zone, October 1963 to December 1968 7 1246
- Armstrong, J. C.** Characteristics of transverse magnetic disturbances observed at 1100 kilometers in the auroral oval 25 4757
- Armstrong, J. C.** Field-aligned current at 1100 km in the auroral region measured by satellite 34 7122
- Armstrong, R. J.** Some drift observations by radio reflections from E<sub>s</sub> 1 183
- Armstrong, T. P.** Trapped energetic nuclei  $Z \geq 3$  in the Earth's outer radiation zone 22 4210
- Armstrong, T. P.** Proton fluxes at 300 kev associated with propagating interplanetary shock waves 31 5980
- Arnoldy, R. L.** Rapid fluctuations of energetic auroral particles 1 228
- Aronson, J. R.** Infrared spectra and radiative thermal conductivity of minerals at high temperatures 17 3443
- Asbridge, J. R.** Vela 4 plasma observations near the Earth's bow shock 7 1217
- Asbridge, J. R.** Solar wind proton properties; Vela 3 observations from July 1965 to June 1967 25 4643
- Asbridge, J. R.** Solar wind ions;  $^{56}\text{Fe}^{+8}$  to  $^{56}\text{Fe}^{+12}$ ,  $^{28}\text{Si}^{+7}$ ,  $^{28}\text{Si}^{+8}$ ,  $^{28}\text{Si}^{+9}$ , and  $^{16}\text{O}^{+6}$  31 6360
- Assaf, G.** Model investigation of the time-dependent distribution of radon 15 3020
- Assaf, G.** Use of isotopic decay rates in turbulent dispersion studies 27 5279
- Athavale, R. N.** Paleomagnetism and tectonics of a Deccan trap lava sequence at Amarkantak, India 20 4000
- Atkinson, G.** Auroral arcs; result of the interaction of a dynamic magnetosphere with the ionosphere 25 4746

- Atlas, David** Measurement of point target speeds with incoherent non-tracking radar; insect speeds in atmospheric waves 36 7588
- Aubry, Michel P.** Inward motion of the magnetopause before a substorm 34 7018
- Avramenko, A. S.** Model for capture of radioactivity by precipitation 18 3613
- Axford, W. I.** Solar wind ion composition 31 6354
- Backus, George E.** Non-uniqueness of the external geomagnetic field determined by surface intensity measurements 31 6339
- Bader, Henri.** The hyperbolic distribution of particle sizes 15 2822
- Baggaley, W. J.** Backscatter observations of F-region field-aligned irregularities during the I.Q.S.Y. 1 152
- Bainbridge, Arnold E.** A carbonate chemistry profile at the 1969 Geosecs intercalibration station in the eastern Pacific Ocean 36 7648
- Baker, D. J.** Oxygen atmospheric and infrared atmospheric bands in the aurora 25 4775
- Baker, K. D.** Oxygen atmospheric and infrared atmospheric bands in the aurora 25 4775
- Bakulin, V. N.** Investigation of turbulent exchange and wash-out by measurement of natural radioactivity in surface air 18 3669
- Baldwin, Barrett** Faint meteor ablation processes 2 495
- Ballard, Harold N.** A constant-altitude balloon experiment at 48 kilometers 18 3501
- Balsley, B. B.** Equatorial spread F; implications of VHF radar observations 34 7199
- Balsley, Ben B.** A longitudinal variation of electron drift velocity in the equatorial electrojet 22 4291
- Balsley, Ben B.** Equatorial electrojet; seasonal variation of the reversal times 22 4369
- Bame, S. J.** Helium in the solar wind 7 1178
- Bame, S. J.** Vela 4 plasma observations near the Earth's bow shock 7 1217
- Bame, S. J.** Observation of a solar flare induced interplanetary shock and helium-enriched driver gas 1 1
- Bame, S. J.** Large-scale characteristics of flare-associated solar wind disturbances 25 4631
- Bame, S. J.** Solar wind proton properties; Vela 3 observations from July 1965 to June 1967 25 4643
- Bame, S. J.** Poleward expansion of the auroral oval and associated phenomena in the magnetotail during auroral substorms, I 34 7060
- Bame, S. J.** Solar wind ions;  $^{56}\text{Fe}^{+8}$  to  $^{56}\text{Fe}^{+12}$ ,  $^{28}\text{Si}^{+7}$ ,  $^{28}\text{Si}^{+8}$ ,  $^{28}\text{Si}^{+9}$ , and  $^{16}\text{O}^{+6}$  31 6360
- Banerjee, Subir K.** Rotational hysteresis study of oxidized basalts 2 375
- Banke, E. G.** Wind stress and turbulence over ice in the Gulf of St. Lawrence 15 2803
- Banks, P. M.** Concerning the influence of elastic scattering upon photoelectron transport and escape 10 1902
- Banks, P. M.** Photoelectron fluxes in the ionosphere 31 6260
- Barasch, Guy E.** Spectral intensities emitted by lightning discharges 6 1049
- Barfield, Joseph N.** Storm-related wave phenomena observed at the synchronous, equatorial orbit 10 1943
- Barger, W. R.** Surface active organic material in the marine atmosphere 24 4561
- Barish, Franklin D.** World contours of conjugate mirror locations 31 6342
- Barnes, Aaron.** Nonthermal heating in the two-fluid solar wind model 34 6915
- Barron, T. H. K.** Thermal expansion of garnets included in diamond 29 5775
- Barth, C. A.** Ogo 4 spectrometer measurements of the tropical ultraviolet airglow 22 4299
- Barth, Charles A.** Mariner 5 measurement of the Earth's Lyman alpha emission 19 3769
- Barth, Charles A.** Theory of nitric oxide in the Earth's atmosphere 19 3903
- Basham, P. W.** An analysis of the "Benham" aftershock sequence using Canadian recordings 8 1545
- Bates, Howard F.** HF propagation through the auroral curtain 1 143
- Bates, Howard F.** Aspect sensitivity of F-layer HF backscatter echoes 1 165
- Bauer, P.** Diurnal variations of the atomic oxygen density and temperature determined from incoherent scatter measurements in the ionospheric F region 25 4825
- Bavassano, B.** Magnetic-field fluctuations in the magnetosheath observed by Pioneers 7 and 8 31 6037
- Beal, H. T.** Calculations of magnetic variations induced by internal ocean waves 33 6846
- Beall, D. S.** Time history of the inner radiation zone, October 1963 to December 1968 7 1246



- Beard, J. Taylor** Influence of solar radiation reflectance on water evaporation 27 5155
- Beardsley, George F., Jr.** An optical and hydrographic study of a temperature inversion off Oregon during upwelling 3 629
- Beardsley, George F., Jr.** Light scattering and suspended particles in the eastern equatorial Pacific Ocean 15 2837
- Beardsley, George F., Jr.** The Columbia river as a source of marine light-scattering particles 24 4570
- Beck, Myrl E., Jr.** Paleomagnetism of Keweenawan intrusive rocks, Minnesota 26 4985
- Beck, R.** Studies of atmospheric  $N_2O$  12 2230
- Bedinger, J. F.** Measurement of winds above 200 kilometers 3 683
- Beg, M. A.** Excess helium 3 at the north Pacific Geosecs station 36 7676
- Begemann, F.** Oxygen-18 variations in atmospheric carbon dioxide; the HASL data 9 1723
- Behannon, K. W.** Proton fluxes at 300 kev associated with propagating interplanetary shock waves 31 5980
- Behannon, Kenneth W.** Geometry of the geomagnetic tail 4 743
- Bellotti, L. H.** Infrared spectra and radiative thermal conductivity of minerals at high temperatures 17 3443
- Belmont, A. D.** The variability of tropical stratospheric winds 15 3133
- Benedict, P. C.** Auroral proton oval 25 4763
- Benson, P. A.** Particle size distribution in clouds from nuclear airbursts 36 7559
- Beran, M.** Use of isotopic decay rates in turbulent dispersion studies 27 5279
- Berg, Otto E.** Orbital elements of micrometeorites derived from Pioneer 8 measurements 34 6932
- Berkson, J. M.** Traveling correlation function of the heights of wind-blown water waves 24 4519
- Berlyand, M. E.** Theory of tracer distribution near the ground 18 3657
- Bernstein, W.** Rocket-borne measurements of  $H\beta$  emissions and energetic hydrogen fluxes during an auroral breakup 4 783
- Bernstein, W.** Impulsive precipitation events during an auroral breakup 19 3915
- Bernstein, W.** Large fluxes of 1-kev atomic hydrogen at 800 km 31 6390
- Berthomier, C.** Very-low-frequency and particle rocket experiment at Kerguelen islands; 1, Very-low-frequency measurements 31 6153
- Bewick, A.** Penetration of low-energy solar protons to low geomagnetic latitudes 25 4605
- Beyers, Norman J.** A constant-altitude balloon experiment at 48 kilometers 18 3501
- Beyers, Norman J.** Measurements from a zero-pressure balloon in the stratopause (48 km) 18 3513
- Bhandari, N.** Vertical structure of the troposphere as revealed by radioactive tracer studies 15 2974
- Bhandari, Narendra.** Transport of air in the stratosphere as revealed by radioactive tracers 15 2927
- Biehler, Shawn.** Topography and tectonics at the intersections of fracture zones with central rifts 14 2748
- Bieri, R. H.** Noble gases in the atmosphere between 43 and 63 kilometers 33 6731
- Binsack, J. H.** Evidence for a geomagnetic wake at 500 Earth radii 28 5319
- Biondi, A. A.** Radio-wave modification of the ionosphere; optical ( $\lambda 6300$ ) detection of radio frequency heating of electrons in the F region 31 6421
- Biondi, M. A.** Coincident F-region temperature determinations from incoherent backscatter and Doppler broadening of [O I] 6300 A 25 4887
- Birch, Francis.** Composition and elastic constants of hortonolite dunite 20 4071
- Bird, John M.** Mountain belts and the new global tectonics 14 2625
- Biro, A.** Vertical distribution of radon 222 in the atmosphere and its use for study of exchange in the lower troposphere 12 2373
- Bischof, Walter.** Comments on paper by R. L. Schwiesow and V. E. Derr, "A Raman scattering method for precise measurement of atmospheric oxygen balance" (see original Vol. 75, No. 9, p. 1629-1632) 30 5960
- Biskamp, D.** Ion sound turbulence in a collisionless shock wave 25 4659
- Bitterberg, W.** Lower thermosphere composition and density above Sardinia in October 1967 28 5528

<b>Blake, Donna.</b> Mean heating of the thermosphere by tides	33 6868
<b>Blake, Henry A.</b> An eclipse study of soft-x-ray distribution over the sun and of the relative contributions of x rays and UV to E-layer formation	34 6980
<b>Blake, J. B.</b> Effects of sudden commencements on solar protons at the synchronous orbit	4 734
<b>Blanc, Daniel</b> A study of radon 220 emanation from soils	2 357
<b>Blanchard, M. B.</b> Microparticle collection experiments during the 1966 Orionid and Leonid meteor showers	4 859
<b>Blanchard, Maxwell B.</b> Examination of surfaces exposed to a noctilucent cloud, August 1, 1968	33 6736
<b>Blank, J. L.</b> Method for estimating the electrical conductivity of the lunar interior	1 201
<b>Bleck, R.</b> Observed distribution of radioactivity, ozone, and potential vorticity associated with tropopause folding	12 2353
<b>Bleck, Rainer.</b> A fast, approximative method for integrating the stochastic coalescence equation	27 5165
<b>Blifford, Irving H., Jr.</b> Tropospheric aerosols	15 3099
<b>Block, Barry</b> Tidal to seismic frequency investigations with a quartz accelerometer of new geometry	8 1493
<b>Blumle, L. J.</b> Positive ion composition from a rocket-borne mass spectrometer	1 133
<b>Bodvarsson, Gunnar.</b> Confined fluids as strain meters	14 2711
<b>Boller, Bruce R.</b> Kelvin-Helmholtz instability and the semiannual variation of geomagnetic activity	31 6073
<b>Bollinger, G. A.</b> Fault length and fracture velocity for the Kyushu, Japan, earthquake of October 3, 1963	5 955
<b>Bomke, Hans A.</b> An eclipse study of soft-x-ray distribution over the sun and of the relative contributions of x rays and UV to E-layer formation	34 6980
<b>Bonner, William D.</b> Reply to letter by James R. Greaves and James H. Willand (see original Vol. 74, No. 18, p. 4581)	12 2214
<b>Bonnevier, Björn</b> A three-dimensional model current system for polar magnetic substorms	1 107
<b>Booker, John R.</b> Mascons and lunar gravity	32 6558
<b>Boore, David M.</b> Love waves in nonuniform wave guides; finite difference calculations	8 1512
<b>Boreman, Judith A.</b> Lunar glasses of impact origin; physical and chemical characteristics and geologic implications	35 7445
<b>Born, Robert M.</b> Temporal coherence in north Pacific sea-surface temperature patterns	30 5952
<b>Borst, W. L.</b> A mass spectrometer observation of NO in an auroral arc	31 6371
<b>Bortner, M. H.</b> Singlet oxygen in polluted environments	15 3115
<b>Bosshard, E.</b> Crustal structure of the western Canary islands from seismic refraction and gravity data	26 4901
<b>Bostrom, C. O.</b> Time history of the inner radiation zone, October 1963 to December 1968	7 1246
<b>Boström, Rolf</b> A three-dimensional model current system for polar magnetic substorms	1 107
<b>Boström, Rolf.</b> Space-charge regions above the aurora	34 7140
<b>Bourdeau, R. E.</b> OGO 4 observations of ion composition and temperatures in the topside ionosphere	19 3867
<b>Bowen, V. T.</b> Ocean fallout; the Crater Lake experiment	6 1084
<b>Boyarsky, E. A.</b> Gravity measurements in the southeast Atlantic on R. V. Academician Kurchatov cruise 3, March 1968 to July 1968	11 2137
<b>Brace, L. H.</b> Significance of the ionosphere-protonosphere coupling for the interpretation of topside sounder profiles	13 2608
<b>Brace, L. H.</b> In situ measurements of neutral and electron density wave structure from the Explorer 32 satellite	16 3200
<b>Bracey, D. R.</b> North Atlantic magnetic smooth zones	20 3955

- Bradley, Wayne E.** Aircraft measurements of the vertical distribution of radon in the lower atmosphere 30 5890
- Brakl, J.** Magnetic anomalies in the northeast Atlantic between the Canary and Cape Verde islands 35 7412
- Brar, S. S.** Instrumental analysis for trace elements present in Chicago area surface air 15 2939
- Braslau, David.** Partitioning of energy in hypervelocity impact against loose sand targets 20 3987
- Bravo, Silvia.** Geostationary satellites and the anisotropies of cosmic-ray propagation in the interplanetary medium 34 7284
- Brice, Neil.** Artificial enhancement of energetic particle precipitation through cold plasma injection; a technique for seeding substorms? 25 4890
- Bridge, H. S.** Evidence for a geomagnetic wake at 500 Earth radii 28 5319
- Briggs, Frank.** Optical properties of Apollo 11 Moon samples 32 6532
- Brinton, H. C.** Observations of irregular structure in thermal ion distributions in the duskside magnetosphere 13 2481
- Broecker, W. S.** Ocean fallout; the Crater Lake experiment 6 1084
- Broecker, Wallace** Radium 226 measurements from the 1969 north Pacific Geosecs station 36 7682
- Broecker, Wallace S.** Interchange of water between the major oceans 18 3545
- Broecker, Wallace S.** A boundary condition on the evolution of atmospheric oxygen 18 3553
- Broecker, Wallace S.** Near-surface and near-bottom radon results for the 1969 north Pacific Geosecs station 36 7679
- Brown, G. Malcolm.** Petrology, mineralogy, and genesis of lunar crystalline igneous rocks 32 6480
- Brown, R. R.** Conjugate observations of an electron precipitation event associated with the sudden commencement of a magnetic storm 34 7099
- Brown, Robert L.** An upper limit for the rate of destruction of  $O_2$  ( $^1\Delta_g$ ) by atomic hydrogen 19 3935
- Bruce, J. G.** Notes on the Somali current system during the southwest monsoon 21 4170
- Bruce, R. L.** Possible observations and mechanism of very long delayed radio echoes 34 7326
- Brune, James N.** Tectonic stress and the spectra of seismic shear waves from earthquakes 26 4997
- Bruner, E. C., Jr.** Absorption measurements of Earth's hydrogen atmosphere from solar hydrogen Lyman alpha rocket data 10 1849
- Brutchhausen, K.** Lower thermosphere composition and density above Sardinia in October 1967 28 5528
- Brutsaert, Wilfried.** Perturbation solution of an equation of atmospheric turbulent diffusion 27 5173
- Bryan, G. M.** Structure of the Blake-Bahama outer ridge 24 4539
- Bryan, George M.** Hydrodynamic model of the Blake outer ridge 24 4530
- Buchau, Jurgen** On the continuity of the auroral oval 34 7147
- Bucker, H. P.** Velocities of compressional and shear waves in marine sediments determined in situ from a research submersible 20 4039
- Buhl, P.** Seismic data from sonobuoy stations in the northern and equatorial Pacific 26 5093
- Bühler, F.** Apollo 11 and 12 solar wind composition experiments; fluxes of He and Ne isotopes 31 5972
- Bunting, D. C.** Evaluating forecasts of ocean-wave spectra 21 4131
- Burke, Rudolf R.** Hydrogen atom participation in D region ion chemistry 7 1345
- Burnell, S. Jocelyn.** Statistical analysis of movements of the ionospheric trough and the plasmopause 28 5600
- Burnett, D. S.** Isotopic composition of gadolinium and neutron-capture effects in some meteorites 14 2753
- Burnett, G. B.** F-region airglow observations from Oso 5 28 5475
- Burns, Alan A.** On the wavelength dependence of radar echoes from the Moon 8 1467
- Burrell, David C.** Chemical characteristics of water masses in the Amerasian basin of the Arctic Ocean 21 4097
- Burrows, D. A.** Electrical charges on snow particles 24 4499

<b>Burrows, J. R.</b> Latitude profiles of low-energy solar electrons	19 3910
<b>Burrows, K.</b> The day-to-day variability of the equatorial electrojet in Peru	7 1319
<b>Burton, Rande K.</b> The Alfvén velocity in the magnetosphere and its relationship to ELF emissions	28 5582
<b>Byerlee, James D.</b> Comments on paper by C. H. Scholz, M. Wyss, S. W. Smith, "Seismic and aseismic slip on the San Andreas fault" (see original Vol. 74, No. 8, p. 2049-2069)	2 499
<b>Byzova, N. L.</b> Use of statistical wind characteristics for theoretical and experimental estimation of passive particle diffusion	18 3605
<b>Cahill, Laurence J., Jr.</b> Magnetosphere inflation during four magnetic storms in 1965	19 3778
<b>Cain, Joseph C.</b> Magnetic field mapping of the inner magnetosphere	22 4360
<b>Cain, Joseph C.</b> Magnetic anomalies from satellite magnetometer	20 4007
<b>Cairns, J. L.</b> A description of the seasonal thermocline cycle in shallow coastal water	6 1127
<b>Calder, I. R.</b> Cosmic ray electron intensity observations	34 7280
<b>Cambray, R. S.</b> Transfer of nuclear debris from southern to northern troposphere during 1968	9 1760
<b>Camfield, P. A.</b> Development of a polar magnetic substorm current system	31 6318
<b>Camnitz, H. G.</b> Differential-phase partial-reflection technique for the determination of D-region ionization	25 4863
<b>Camp, Dennis W.</b> Comparison of tower influence on wind velocity for NASA's 150-meter meteorological tower and a wind tunnel model of the tower	6 1117
<b>Camp, Dennis W.</b> Response tests of cup, vane, and propeller wind sensors	27 5265
<b>Campbell, W. H.</b> Rapid auroral luminosity fluctuations and geomagnetic field pulsations	31 6182
<b>Caputo, M.</b> Deep structure of the Mediterranean basin	26 4919
<b>Carder, Kendall.</b> Light scattering and suspended particles in the eastern equatorial Pacific Ocean	15 2837
<b>Carlqvist, Per</b> Space-charge regions above the aurora	34 7140
<b>Carlson, H. C.</b> Discrepancy in electron temperatures deduced from Langmuir probes and from incoherent scatter radars	25 4883
<b>Carmi, I.</b> Evolution of the isotopic composition of atmospheric waters in the Mediterranean Sea area	15 3039
<b>Carnuth, W.</b> Aerosol size distribution at 700-, 1800-, and 3000-meter altitudes	15 2999
<b>Carpenter, D. L.</b> Whistler evidence of large-scale electron-density irregularities in the plasmasphere	19 3825
<b>Carpenter, D. L.</b> Whistler evidence of the dynamic behavior of the duskside bulge in the plasmasphere	19 3837
<b>Carr, Russell E.</b> Phase function approach for free toroidal oscillations	2 485
<b>Carroll, J. J.</b> Dust devil wind velocities; mature state	3 531
<b>Carroll, J. J.</b> Atmospheric vorticity and dust devil rotation	27 5179
<b>Carver, F. I.</b> Auroral activity near Banff, Alberta	10 1935
<b>Chan, T.</b> A study of scintillations at low latitudes during a period from sunspot minimum to sunspot maximum	13 2517
<b>Chandra, S.</b> OGO 4 observations of ion composition and temperatures in the topside ionosphere	19 3867
<b>Chandra, Umesh.</b> Comparison of focal mechanism solutions obtained from P- and S-wave data	17 3411
<b>Chandra, Umesh.</b> Correction for focal mechanism in body-wave magnitude determination	17 3421
<b>Chang, G. K.</b> A secondary ejecta explanation of a lunar seismogram	35 7426
<b>Chang, Ming-Shun.</b> The mass transport in deep-water long-crested random gravity waves; reply (see original Vol. 74, No. 6, p. 1515-1536)	12 2213
<b>Chao, E. C. T.</b> Lunar glasses of impact origin; physical and chemical characteristics and geologic implications	35 7445
<b>Chao, Jih Kwin</b> Observation of slow shocks in interplanetary space	31 6394
<b>Chapman, Clark R.</b> Lunar cratering and erosion from Orbiter 5 photographs	8 1445
<b>Chapman, Seville.</b> Corona point current in wind	12 2165
<b>Chappell, C. R.</b> A study of the influence of magnetic activity on the location of the plasmopause as measured by OGO 5	1 50



- Chappell, C. R.** Observations of the plasmopause from OGO 5 1 219
- Chappell, C. R.** The morphology of the bulge region of the plasmasphere 19 3848
- Chappell, Charles R.** The Alfvén velocity in the magnetosphere and its relationship to ELF emissions 28 5582
- Charlson, Robert J.** The integrating nephelometer as an instrument for studying atmospheric aerosols 15 3146
- Chase, L. M.** Energy spectra of auroral zone particles 34 7128
- Chatelain, A.** Electron and nuclear magnetic resonance of three chondritic meteorites 29 5681
- Chen, A. J.** Penetration of low-energy protons deep into the magnetosphere 13 2458
- Chen, C. S.** Subsidiary resonances in the ionosphere 31 6377
- Chimonas, G.** Atmospheric gravity waves induced by a solar eclipse 4 875
- Chimonas, G.** Internal gravity-wave motions induced in the Earth's atmosphere by a solar eclipse 28 5545
- Chodos, A. A.** Titanoclinohumite; a possible mineralogical site for water in the upper mantle 2 255
- Christensen, Andrew B.** Energy spectra of precipitating electrons from observations of optical aurora, Bremsstrahlung x rays, and auroral absorption 22 4266
- Christensen, M. N.** Structure of Mono basin, California; reply (see original Vol. 74, No. 22, p. 5221-5239) 20 4081
- Christensen, Nikolas I.** Compressional-wave velocities in basalts from the Juan de Fuca ridge 14 2773
- Christodoulides, C.** Thermoluminescence in tektites 5 983
- Chubb, T. A.** Observations of the aurora in the far ultraviolet from OGO 4 7 1290
- Chubb, T. A.** Equatorial aurora/airglow in the far ultraviolet 31 6233
- Chung, D. H.** On the calculation of the seismic parameter  $\phi$  at high pressure and high temperatures 26 5113
- Chung, D. H.** Dielectric properties of Apollo 11 lunar samples and their comparison with Earth materials 32 6524
- Chung, D. H.** Effects of iron/magnesium ratio on P- and S-wave velocities in olivine 35 7353
- Chung, Yu-chia** Radium 226 measurements from the 1969 north Pacific Geosecs station 36 7682
- Chupp, E. L.** Discussion of paper by R. C. Haymes, S. W. Glenn, G. J. Fishman, and F. R. Harnden, Jr., "Low-energy gamma radiation in the atmosphere at midlatitudes" (see original Vol. 74, No. 24, 5792-5805) 4 871
- Chupp, E. L.** Latitude and altitude dependence of the cosmic ray albedo neutron flux 22 4197
- Cladis, J. B.** Redistribution of trapped 55-Mev protons by Starfish nuclear explosion 1 57
- Clafin, E. Scott** Injection of protons into the radiation belt by solar neutron decay 7 1257
- Clark, George B.** Comments on paper by R. F. Favreau, "Generation of strain waves in rock by an explosion in a spherical cavity" (see original Vol. 74, No. 17, p. 3367-3386) 26 5138
- Clark, I. D.** Photodissociation of CO<sub>2</sub> on Mars 34 7307
- Clark, I. D.** Photoionization cross section of O<sub>2</sub>(<sup>1</sup>Δ<sub>g</sub>) at wavelengths between 1035 and 1118 Å 3 699
- Clark, K. C.** Auroral activity near Banff, Alberta 10 1935
- Clark, K. C.** Recent occurrences of stable auroral red arcs 13 2511
- Clark, M. A.** On the diurnal variation of the exospheric neutral hydrogen temperature 28 5587
- Clarke, W. B.** Excess helium 3 at the north Pacific Geosecs station 36 7676
- Clarke, W. B.** Aluminum 26-magnesium 26 dating of feldspar in meteorites 2 448
- Clay, C. S.** Traveling correlation function of the heights of wind-blown water waves 24 4519
- Closs, R. L.** Redistribution of ionization by the meridional currents associated with the equatorial electrojet 13 2611
- Cloutier, P. A.** Detection of geomagnetically aligned currents associated with an auroral arc 13 2595
- Clowes, R. M.** Seismic attenuation and the nature of reflecting horizons within the crust 32 6693
- Cogger, L. L.** Coincident F-region temperature determinations from incoherent backscatter and Doppler broadening of [O I] 6300 Å 25 4887

- Cohen, Robert** Radio-wave modification of the ionosphere; radio-reflectivity detection of artificial modification of the ionospheric F layer 31 6439
- Colburn, D. S.** Observation of a solar flare induced interplanetary shock and helium-enriched driver gas 1 1
- Colburn, David S.** Interplanetary sector structure near the maximum of the sunspot cycle 31 6366
- Cole, K. D.** Relationship of geomagnetic fluctuations to other magnetospheric phenomena 22 4216
- Coleman, P. J.** OGO 5 observations of electrostatic turbulence in bow shock magnetic structures 19 3751
- Coleman, P. J., Jr.** Sudden impulses in the magnetosphere observed at synchronous orbit 34 7255
- Coleman, P. J., Jr.** Direct correlations of large-amplitude waves with suprathermal protons in the upstream solar wind 34 7316
- Coleman, Paul J., Jr.** Storm-related wave phenomena observed at the synchronous, equatorial orbit 10 1943
- Coleman, Paul J., Jr.** Magnetic fluctuations during magnetospheric substorms; 1, Expansion phase 19 3927
- Colgate, Stirling A.** Charge versus drop size in an electrified cloud 30 5873
- Colvin, Jeffrey D.** Transient waves in a Voigt-medium 29 5767
- Conrath, B. J.** The infrared interferometer experiment on Nimbus 3 30 5831
- Cooke, D. J.** Directional cosmic-ray cutoffs and the loop-cone phenomenon at midlatitude sites 31 5961
- Cornwall, John M.** Turbulent loss of ring current protons 25 4699
- Cornwall, John M.** Adiabatic preservation of gyrophase coherence in the Earth's field 22 4339
- Coroniti, F. V.** Auroral micropulsation instability 10 1863
- Coroniti, F. V.** Electron precipitation pulsations 7 1279
- Coroniti, F. V.** Turbulent loss of ring current protons 25 4699
- Coroniti, F. V.** Turbulence structure of high- $\beta$  perpendicular fast shocks 34 7007
- Coroniti, F. V.** VLF electric field observations in the magnetosphere 31 6136
- Cory, H.** Very-low-frequency and particle rocket experiment at Kerguelen islands; 1, Very-low-frequency measurements 31 6153
- Costain, John K.** Probe response and continuous temperature measurements 20 3969
- Costin, J. M.** Visual observations of suspended-particle distribution at three sites in the Caribbean sea 21 4144
- Cowperthwaite, Michael.** Hugoniot and release-adiabat measurements for selected geologic materials 11 2063
- Cox, Allan.** Reconciliation of statistical models for reversals 35 7501
- Cox, L. P.** Seasonal variation of the  $F_1$ -region ion composition 1 159
- Cox, L. P.** Seasonal variation of the  $O/N_2$  ratio in the  $F_1$  region 31 6271
- Craddock, Campbell** Refraction seismic investigations of the northern midcontinent gravity high 26 5056
- Craig, H.** Abyssal carbon 13 in the south Pacific 3 691
- Craig, H.** Oxygen-18 variations in atmospheric carbon dioxide; the HASL data 9 1723
- Craig, H.** The Geosecs 1969 intercalibration station; introduction, hydrographic features, and total  $CO_2$ - $O_2$  relationships 36 7641
- Craig, H.** Carbon 13 measurements on dissolved inorganic carbon at the north Pacific (1969) Geosecs station 36 7668
- Craig, Harmon.** Excess helium 3 at the north Pacific Geosecs station 36 7676
- Craig, Harmon.** Radium 226 measurements from the 1969 north Pacific Geosecs station 36 7682
- Craven, J. D.** A survey of low-energy ( $E \geq 5$  kev) electron energy fluxes over the northern auroral regions with satellite Injun 4 13 2468
- Crawford, F. W.** Stability analysis of whistler amplification 1 85
- Crawford, F. W.** Parametric wave amplification and mixing in the ionosphere 28 5459
- Crawford, F. W.** Possible observations and mechanism of very long delayed radio echoes 34 7326

- Croft, Thomas A.** Shape of a solar wind disturbance on July 9, 1966, inferred from radio signal delay to Pioneer 6 25 4623
- Crook, G. M.** OGO 5 observations of electrostatic turbulence in bow shock magnetic structures 19 3751
- Croom, D. L.** 19-Gigahertz (1.58-centimeter) solar radio bursts as indicators of proton events 34 6940
- Crozier, W. D.** Dust devil properties 24 4583
- Cruden, D. M.** A theory of brittle creep in rock under uniaxial compression 17 3431
- Culberson, Charles H.** A carbonate chemistry profile at the 1969 Geosecs intercalibration station in the eastern Pacific Ocean 36 7648
- Cummings, W. D.** Comparison of the predicted and observed magnetic field at ATS 1 34 7117
- Dahlberg, E.** Viscous model of solar wind flow 31 6312
- Dahlen, John.** Preliminary results of internal wave measurements in the main thermocline at Bermuda 30 5899
- Dally, J. W.** Photoelastic analysis of Rayleigh wave propagation in wedges 17 338
- D'Angelo, N.** Type II irregularities in the equatorial electrojet 19 3879
- Danielsen, E.** Observed distribution of radioactivity, ozone, and potential vorticity associated with tropopause folding 12 2353
- Dartt, D. G.** The variability of tropical stratospheric winds 15 3133
- Das Gupta, M. K.** Asymmetry in the distribution of sources of solar microwave bursts on the solar disk 34 7250
- Davidson, G. T.** Redistribution of trapped 55-Mev protons by Starfish nuclear explosion 1 57
- Davies, Geoffrey F.** A proposed equation of state of stishovite 2 310
- Davis, John R.** Decameter and meter wavelength radar studies of artificial plasma clouds in the lower ionosphere; 1, Thermodynamic properties of the atmosphere discerned from blast wave measurements 1 171
- Davis, L., Jr.** The effect of viscosity and anisotropy in the pressure on the azimuthal motion of the solar wind 13 2419
- Davis, Leverett, Jr.** Magnetic measurements in the Earth's magnetosphere and magnetosheath; Mariner 5 7 1233
- Dawson, G. A.** The Rayleigh instability of water drops in the presence of external electric fields 3 701
- Dawson, G. A.** Electrical corona from water-drop surfaces 12 2153
- Dawson, G. A.** Discussion of paper by J. Latham and V. Myers, "Loss of charge and mass from raindrops falling in intense electric fields" (see original Vol. 75, No. 3, p. 515-520) 24 4589
- Dawson, G. A.** Initiation of cloud-to-ground lightning strokes 30 5858
- Day, R.** Rotational hysteresis study of oxidized basalts 2 375
- de la Porte des Vaux, B.** Very-low-frequency and particle rocket experiment at Kerguelen islands; 2, Particle measurements 31 6169
- de Pena, Rosa G.** Freezing temperatures of water droplets in equilibrium with different gases; correction (see original Vol. 75, No. 15, p. 2831-2835) 27 5296
- de Pena, Rosa G.** Freezing temperatures of water droplets in equilibrium with different gases 15 2831
- de Wolf, David A.** Evidence for severe microwave signal fading in the atmosphere of Venus due to turbulence 7 1202
- Dearden, E. W.** Doppler shift in high-frequency ground backscatter compared with Doppler shift in a retransmitted signal 31 6382
- Deardorff, James W.** Discussion of paper by V. H. Regener and L. Aldaz, "Turbulent transport near the ground as determined from measurements of the ozone flux and the ozone gradient" (see original Vol. 74, No. 28, p. 6935-6942) 21 4184
- DeMore, W. B.** The efficiency of CO<sub>2</sub> formation in the Mars and Venus atmospheres 25 4898
- Der, Z.** Effects of observational errors on the resolution of surface waves at intermediate distances 17 3399
- Derr, V. E.** A Raman scattering method for precise measurement of atmospheric oxygen balance 9 1629

- Desborough, George A. Lunar glasses of impact origin; physical and chemical characteristics and geologic implications 35 7445
- Deshmukh, A. R. Observations of irregular structure in thermal ion distributions in the duskside magnetosphere 13 2481
- Despain, A. M. Oxygen atmospheric and infrared atmospheric bands in the aurora 25 4775
- Dessler, A. J. Location of neutral line in magnetotail 34 7323
- Dessler, A. J. Diffusive entry of solar-flare particles into geomagnetic tail 31 6061
- Deuser, W. G. Carbon 13 measurements on dissolved inorganic carbon at the north Pacific (1969) Geosecs station 36 7668
- Dewey, John F. Mountain belts and the new global tectonics 14 2625
- Dhanju, M. S. Short-period fluctuations of cosmic ray intensity at the geomagnetic equator and their solar and terrestrial relationship 10 1795
- Dick, K. A. An observation in situ of an auroral pulsation 7 1334
- Dick, K. A. Some spectrometric results from the NASA 1968 airborne auroral expedition 28 5605
- Dick, K. A. Tentative identification of several  $N_2$  c'  $^1\Sigma_u^+ \rightarrow \alpha$   $^1\Pi_g$  bands in auroras 28 5609
- Dickinson, Dale F. Refractive corrections in high-accuracy radio interferometry 8 1619
- Dietz, Robert S. Tenoumer crater, Mauritania; age and petrologic evidence for origin by meteorite impact 23 4396
- Dietz, Robert S. Reconstruction of Pangaea; breakup and dispersion of continents, Permian to present 26 4939
- Divoky, David Breaking waves on gentle slopes 9 1681
- Divoky, David. Tsunami generation 33 6802
- Dixon, R. Conservation theorem in magnetohydrodynamics 25 4897
- Dmitriyeva, G. V. Some peculiarities of fission product concentration distributions over oceans in the tropical zone and their connection with atmospheric processes 18 3675
- Dobson, E. B. Measurement of the fine-scale structure of the sea 15 2853
- Dodge, F. C. W. Fission track annealing and age determination of epidote minerals 8 1579
- Doering, J. P. Photoelectron excitation of  $N_2$  in the day airglow 25 4787
- Dohnanyi, J. S. On the origin and distribution of meteoroids 17 3468
- Donahue, T. M. A mass spectrometer observation of NO in an auroral arc 31 6371
- Donelan, Mark. Airborne measurement of turbulent fluxes 24 4506
- Donley, J. L. OGO 4 observations of ion composition and temperatures in the topside ionosphere 19 3867
- Dorman, LeRoy M. Correction to paper by Brian T. R. Lewis and LeRoy M. Dorman "An isostatic model for the U.S.A. derived from gravity and topographic data" (see original Vol. 75, No. 17, p. 3367-3386) 23 4482
- Dorman, LeRoy M. Experimental isostasy; 1, Theory of the determination of the Earth's isostatic response to a concentrated load 17 3357
- Dorman, LeRoy M. Experimental isostasy; 2, An isostatic model for the U.S.A. derived from gravity and topographic data 17 3367
- Dowling, Forrest L. Magnetotelluric measurements across the Wisconsin arch 14 2683
- Dowling, John J. Uncertainties in velocities determined by seismic refraction 32 6696
- Doyle, H. A. On the smoothing and spherical harmonic analysis of the storm of September 25, 1958 13 2569
- Drake, John Composition and elastic constants of hortonolite dunite 20 4071
- Droppleman, J. D. Apparent microwave emissivity of sea foam 3 696
- Droppleman, J. D. An airborne measurement of the salinity variations of the Mississippi River outflow 30 5909
- Drozdova, V. M. Content of trace elements in precipitation 18 3610
- Druilhet, Aimé. A study of radon 220 emanation from soils 2 357
- Duennebie, Frederick K. Seismic slip rate versus sea-floor spreading rate on the eastern Pacific rise and Pacific Antarctic ridge 17 3285



<b>Duennebier, Frederick K.</b> Elastic properties of the lunar surface from Surveyor spacecraft data	35 7439
<b>Duff, D. G.</b> Initiation of cloud-to-ground lightning strokes	30 5858
<b>Duggal, S. P.</b> The variation with a period of two solar cycles in the cosmic ray diurnal anisotropy for the nucleonic component	7 1150
<b>Dunckel, N.</b> Low-frequency noise observed in the distant magnetosphere with OGO 1	10 1854
<b>Durrani, S. A.</b> Thermoluminescence in tektites	5 983
<b>Dütsch, H. U.</b> Atmospheric ozone; a short review	9 1707
<b>Duysinx, R.</b> Spatial separation of $\lambda 3914$ - and $\lambda 5577$ -A emissions in an aurora	13 2606
<b>Dyer, A. J.</b> Anisotropic diffusion coefficients and the global spread of volcanic dust	15 3007
<b>Dyson, P. L.</b> Some ionospheric properties at 1000 kilometers altitude within and near the auroral zone	10 1893
<b>Dyson, P. L.</b> In situ measurements of neutral and electron density wave structure from the Explorer 32 satellite	16 3200
<b>Eberhardt, P.</b> Apollo 11 and 12 solar wind composition experiments; fluxes of He and Ne isotopes	31 5972
<b>Echternacht, K. L.</b> An observation of an inertial flow at low latitude	12 2207
<b>Eckroad, S. W.</b> Infrared spectra and radiative thermal conductivity of minerals at high temperatures	17 3443
<b>Economou, Thanasis E.</b> The alpha-scattering technique of chemical analysis	32 6514
<b>Edmond, John M.</b> Comments on the paper by T. L. Ku, Y. H. Li, G. G. Mathieu, and H. K. Wong, "Radium in the Indian-Antarctic Ocean south of Australia" (see original Vol. 75, No. 27, p. 5286-5292)	33 6878
<b>Edmond, John M.</b> A carbonate chemistry profile at the 1969 Geosecs intercalibration station in the eastern Pacific Ocean	36 7648
<b>Egidi, A.</b> Solar wind and location of shock front and magnetopause at the 1969 solar maximum	34 6999
<b>Egorov, V. V.</b> Microelement content of surface air above the continent and the ocean	18 3650
<b>Ehhalt, D. H.</b> The seasonal variation in the concentration of strontium 90 in rain and its dependence on latitude	15 3027
<b>Ehhalt, D. H.</b> Water vapor, molecular hydrogen, methane, and tritium concentrations near the stratopause	15 3049
<b>Ehhalt, Dieter H.</b> Deuterium in hurricane Faith 1966; preliminary results	12 2323
<b>Einaudi, F.</b> Shock formation in acoustic gravity waves	1 193
<b>Eittrheim, S. L.</b> Influences of Norwegian Sea overflow water on sedimentation in the northern north Atlantic and Labrador Sea	9 1655
<b>Elsasser, Walter M.</b> The so-called folded mountains	8 1615
<b>Emslie, A. G.</b> Infrared spectra and radiative thermal conductivity of minerals at high temperatures	17 3443
<b>Engels, J. C.</b> Fission track annealing and age determination of epidote minerals	8 1579
<b>Epp, David</b> Heat flow in the Caribbean and Gulf of Mexico	29 5655
<b>Ergin, M.</b> Carbon-14 concentrations in the atmosphere and carbon dioxide exchange rates	15 3089
<b>Ernst, W. G.</b> Tectonic contact between the Franciscan mélange and the Great Valley sequence; crustal expression of a late Mesozoic Benioff zone	5 886
<b>Etcheto, J.</b> Very-low-frequency and particle rocket experiment at Kerguelen islands; 2, Particle measurements	31 6169
<b>Ettinger, K. V.</b> Thermoluminescence in tektites	5 983
<b>Eugster, O.</b> Isotopic composition of gadolinium and neutron-capture effects in some meteorites	14 2753
<b>Evans, D. E.</b> An airborne measurement of the salinity variations of the Mississippi River outflow	30 5909
<b>Evans, J. V.</b> Detection of conjugate photoelectrons at Millstone Hill	4 807
<b>Evans, J. V.</b> Seasonal variation of the $F_1$ -region ion composition	1 159
<b>Evans, J. V.</b> Midlatitude ionospheric temperatures during three magnetic storms in 1965	25 4803
<b>Evans, J. V.</b> F-region heating observed during the main phase of magnetic storms	25 4815

- Evans, J. V.** Comparison of radar and optical temperature measurements in the F region 25 4881
- Evans, J. V.** Seasonal variation of the O/N<sub>2</sub> ratio in the F<sub>1</sub> region 31 6271
- Evans, W. F. J.** Radio-wave modification of the ionosphere; preliminary results from the 1.27-micron measurements in the Boulder ionospheric modification experiment 31 6425
- Evernden, J. F.** Magnitude versus yield of explosions 5 1028
- Ewing, J.** Seismic data from sonobuoy stations in the northern and equatorial Pacific 26 5093
- Ewing, J.** Correlation of horizon A with Joides bore-hole results 29 5645
- Ewing, J. I.** Influences of Norwegian Sea overflow water on sedimentation in the northern north Atlantic and Labrador Sea 9 1655
- Ewing, J. I.** Structure of the Blake-Bahama outer ridge 24 4539
- Ewing, John I.** Sediment distribution in the Coral Sea 11 1963
- Ewing, M.** Influences of Norwegian Sea overflow water on sedimentation in the northern north Atlantic and Labrador Sea 9 1655
- Ewing, M.** Correlation of horizon A with Joides bore-hole results 29 5645
- Ewing, Maurice** Crustal structure of the Coral Sea 11 1953
- Ezemenari, F. R. C.** Autumnal peak in <sup>109</sup>Cd fallout in precipitation at Calgary, Canada 27 5271
- Fairbairn, H. W.** Strontium 87/strontium 86 initial ratios in pyroxene granulite terranes 32 6706
- Fairfield, D. H.** Correction to paper by D. H. Fairfield, "Bow shock associated waves observed in the far upstream interplanetary medium" (see original Vol. 74, No. 14, p. 3541-3553) 28 5644
- Fairfield, D. H.** Configuration of the geomagnetic tail during substorms 34 7032
- Fairfield, Donald H.** Magnetic field fluctuations in the Earth's magnetosheath 31 6050
- Faller, Alan J.** Numerical studies of penetrative convective instabilities 3 521
- Farley, D. T.** Equatorial spread F; implications of VHF radar observations 34 7199
- Farlow, N. H.** Microparticle collection experiments during the 1966 Orionid and Leonid meteor showers 4 859
- Farlow, Neil H.** Examination of surfaces exposed to a noctilucent cloud, August 1, 1968 33 6736
- Farmer, D.** Observations of ice drift from a manned drifting station in the Gulf of St. Lawrence 15 2863
- Farnham, Paul R.** Refraction seismic investigations of the northern midcontinent gravity high 26 5056
- Farrell, W. E.** Linearization and calibration of electrostatically feedback gravity meters 5 928
- Fastie, W. G.** Far-ultraviolet altitude profiles and molecular oxygen densities in an aurora 4 788
- Fastie, William G.** Photoelectron excitation of N<sub>2</sub> in the day airglow 25 4787
- Fastie, William G.** Mariner 5 measurement of the Earth's Lyman alpha emission 19 3769
- Fechtig, H.** Particle collection results from a rocket flight on August 1, 1968 33 6751
- Federer, B.** Outflow and accumulation of ice in Jarl-Joset station, Greenland 24 4567
- Fedorov, G. A.** Mean residence time of radioactive aerosols in the upper layers of the atmosphere based on fallout of high-altitude tracers 18 3569
- Feely, Herbert W.** Use of lead 210 as a tracer of transport processes in the stratosphere 15 2885
- Fehsenfeld, F. C.** Ionospheric Si<sup>+</sup> and SiO<sup>+</sup> 22 4366
- Fehsenfeld, F. C.** Correction to letter by E. E. Ferguson, F. C. Fehsenfeld, and J. D. Whitehead, "Ionospheric Si<sup>+</sup> and SiO<sup>+</sup>" (see original Vol. 75, No. 22, p. 4366-4368) 34 7333
- Feiner, M.** Ocean fallout; the Crater Lake experiment 6 1084
- Feix, G.** Solar bursts at millimeter wavelengths 1 211
- Fejer, J. A.** Excitation of plasma resonances by a small pulsed dipole in a weakly inhomogeneous plasma 10 1919
- Felder, W.** Experimental evidence of the photochemical instability of a pure CO<sub>2</sub> planetary atmosphere 34 7311
- Feldman, P. D.** Photoelectron excitation of N<sub>2</sub> in the day airglow 25 4787

- Fennell, J. F.** Artificial injection of electrons into the geomagnetic field by Teak and Orange, low-altitude bursts of 1958 25 4710
- Fennell, Joseph F.** Observations of proton bursts in the magnetotail with Explorer 35 34 7048
- Fenton, A. G.** The neutron flux at balloon altitudes during a solar proton event 25 4595
- Fenton, K. B.** The neutron flux at balloon altitudes during a solar proton event 25 4595
- Ferguson, E. E.** Ionospheric  $\text{Si}^+$  and  $\text{SiO}^+$  22 4366
- Ferguson, E. E.** Correction to letter by E. E. Ferguson, F. C. Fehsenfeld, and J. D. Whitehead, "Ionospheric  $\text{Si}^+$  and  $\text{SiO}^+$ " (see original Vol. 75, No. 22, p. 4366-4368) 34 7333
- Ferguson, William S.** Atmospheric dusts from the north Pacific; a short note on a long-range eolian transport 6 1137
- Ferry, G. V.** Microparticle collection experiments during the 1966 Orionid and Leonid meteor showers 4 859
- Ferry, Guy V.** Examination of surfaces exposed to a noctilucent cloud, August 1, 1968 33 6736
- Ferry, Guy V.** Noctilucent cloud observation in connection with the flight of a sounding rocket 33 6857
- Feuerstein, M.** Particle collection results from a rocket flight on August 1, 1968 33 6751
- Few, A. A.** Comments on letter by W. W. Troutman, "Numerical calculation of the pressure pulse from a lightning stroke" (see original Vol. 74, No. 18, p. 4595) 21 4192
- Few, A. A.** Lightning channel reconstruction from thunder measurements 36 7517
- Ficklin, B.** Low-frequency noise observed in the distant magnetosphere with OGO 1 10 1854
- Field, E. C.** VLF and ELF propagation during sudden ionospheric disturbances 10 1927
- Filz, Robert C.** Time variations of radiation belt protons 22 4322
- Finkelman, R. B.** Chemical and mineralogical compositions of cosmic and terrestrial spherules from a marine sediment 11 2125
- Finley, L. T.** Solar wind structure determined by corotating coronal inhomogeneities; 1, Velocity-driven perturbations 10 1817
- Fireman, E. L.** Argon 37 and argon 39 in recently fallen meteorites and cosmic-ray variations 11 2115
- Fishman, G. J.** Low-energy gamma radiation in the atmosphere at midlatitudes; reply (see original Vol. 74, No. 24, p. 5792) 4 873
- Fitch, Thomas J.** Focal mechanisms along inclined earthquake zones in the Indonesia-Philippine region 8 1431
- Fitch, Thomas J.** Earthquake mechanisms in the Himalayan, Burmese, and Andaman regions and continental tectonics in Central Asia 14 2699
- Fitch, Thomas J.** Strain and creep in central California 23 4447
- Flindt, Herbert R.** Local-time dependence of geomagnetic cutoffs for solar protons,  $0.52 \leq E_p \leq 4$  Mev 1 39
- Flood, W. A.** Differential-phase partial-reflection technique for the determination of D-region ionization 25 4863
- Flowerday, T. W.** Plasma measurements with the retarding potential analyzer on Ogo 6 28 5483
- Fogle, Benson.** Particles collected during a noctilucent cloud display 33 6853
- Folinsbee, A.** Heat flow between the Caribbean sea and the Mid-Atlantic ridge 11 1973
- Folsom, T. R.** Trace element calibrations and profiles at the Geosecs test station in the northeast Pacific Ocean 36 7688
- Fontan, J.** Vertical distribution of radon 222 in the atmosphere and its use for study of exchange in the lower troposphere 12 2373
- Fontan, Jacques** A study of radon 220 emanation from soils 2 357
- Forbes, Robert B.** Seismic refraction profiles of the ash flow in the Valley of Ten Thousand Smokes, Katmai National Monument, Alaska 14 2619
- Forbush, S. E.** The variation with a period of two solar cycles in the cosmic ray diurnal anisotropy for the nucleonic component 7 1150
- Forman, Miriam A.** The equilibrium anisotropy in the flux of 10-Mev solar flare particles and their convection in the solar wind 16 3147
- Formisano, V.** Solar wind and location of shock front and magnetopause at the 1969 solar maximum 34 6999

- Forrest, D. J.** Discussion of paper by R. C. Haymes, S. W. Glenn, G. J. Fishman, and F. R. Harnden, Jr., "Low-energy gamma radiation in the atmosphere at midlatitudes" (see original Vol. 74, No. 24, 5792-5805) 4 871
- Forslund, D. W.** Instabilities associated with heat conduction in the solar wind and their consequences 1 17
- Foster, John H.** Upper Miocene to recent magnetic stratigraphy in deep-sea sediments 23 4465
- Foster, M. R.** Statistical estimation of systematic errors at intersections of lines of aeromagnetic survey data 8 1507
- Fountain, James A.** Thermal conductivity of particulate basalt as a function of density in simulated lunar and Martian environments 20 4063
- Fox, Douglas G.** Forced plume in a stratified fluid 33 6818
- Francey, R. J.** Electron production in the ionospheric D region by cosmic x-rays 25 4849
- Francheteau, Jean** Comments on paper by E. Irving and W. A. Robertson, "Test for polar wandering and some possible implications" (see original Vol. 74, No. 4, p. 1026-1036) 5 1023
- Francheteau, Jean** Magnetization of Pacific seamounts; a preliminary polar curve for the northeastern Pacific 11 2035
- Francis, W. E.** Redistribution of trapped 55-Mev protons by Starfish nuclear explosion 1 57
- Frank, Evelyn R.** Particles collected during a noctilucent cloud display 33 6853
- Frank, L. A.** Direct detection of asymmetric increases of extraterrestrial "ring current" proton intensities in the outer radiation zone 7 1263
- Frank, L. A.** Omnidirectional intensity contours of low-energy protons ( $0.5 \leq E \leq 50$  kev) in the Earth's outer radiation zone at the magnetic equator 7 1269
- Frank, L. A.** On the presence of low-energy protons ( $5 \leq E \leq 50$  kev) in the interplanetary medium 4 707
- Frank, L. A.** Electron observations between the inner edge of the plasma sheet and the plasmasphere 28 5401
- Frank, L. A.** Direct correlations of large-amplitude waves with suprathermal protons in the upstream solar wind 34 7316
- Franzgrote, Ernest J.** The alpha-scattering technique of chemical analysis 32 6514
- Fraser-Smith, A. C.** Some statistics on Pc 1 geomagnetic micropulsation occurrence at middle latitudes; inverse relation with sunspot cycle and semi-annual period 25 4735
- Fredericks, Alan D.** Organic carbon in the Gulf of Mexico 12 2199
- Fredricks, R. W.** OGO 5 observations of quasi-trapped electromagnetic waves in the solar wind 19 3735
- Fredricks, R. W.** OGO 5 observations of electrostatic turbulence in bow shock magnetic structures 19 3751
- Fredricks, R. W.** Direct correlations of large-amplitude waves with suprathermal protons in the upstream solar wind 34 7316
- Fredricks, R. W.** VLF electric field observations in the magnetosphere 31 6136
- Freier, G. D.** Interaction of a thunderstorm with a conducting atmosphere; reply (see original Vol. 74, No. 23, p. 5390-5396) 9 1699
- Freier, G. D.** Discharges from a large positively stressed electrode 36 7531
- French, Bevan M.** Tenoumer crater, Mauritania; age and petrologic evidence for origin by meteorite impact 23 4396
- Freudenthal, Peter C.** Strontium 90 concentrations in surface air; North America versus Atlantic Ocean from 1966 to 1969 21 4089
- Friedman, M.** Influence of residual elastic strain on the orientation of experimental fractures in three quartzose sandstones 2 387
- Fritz, T. A.** Trapped energetic nuclei  $Z \geq 3$  in the Earth's outer radiation zone 22 4210
- Fritz, T. C.** Extrapolation formula for finding the volume of solids at high pressures 8 1557
- Fritz, Theodore A.** Study of the high-latitude, outer-zone boundary region for  $\geq 40$ -kev electrons with satellite Injun 3 28 5387
- Fu, Jerry H. M.** Potential distribution surrounding a photo-emitting plate in a dilute plasma 16 3193



- Fuller, Michael** Comments on paper by P. N. Shive, "The effect of internal stress on the thermoremanence of nickel" (see original Vol. 74, No. 15, p. 3781-3788) 14 2781
- Gainer, John L.** Influence of solar radiation reflectance on water evaporation 27 5155
- Gaines, E. E.** High-resolution studies of electrons 25 kev to 2.7 Mev precipitating at high latitudes 4 776
- Galejs, Janis.** F layer reflections and ion effects in the propagation of terrestrial ELF waves 13 2529
- Galejs, Janis.** Frequency variations of Schumann resonances 16 3237
- Gall, Ruth** Geostationary satellites and the anisotropies of cosmic-ray propagation in the interplanetary medium 34 7284
- Gangi, Anthony F.** A derivation of the seismic representation theorem using seismic reciprocity 11 2088
- Ganguly, S.** Role of short-wavelength x-rays in the D region ionization 28 5626
- Garger, E. K.** Use of statistical wind characteristics for theoretical and experimental estimation of passive particle diffusion 18 3605
- Garnham, G. L.** Longitudinal variation of ozone in the lower middle latitudes of the southern hemisphere 21 4174
- Garrett, H. B.** Comments on letter by W. W. Troutman, "Numerical calculation of the pressure pulse from a lightning stroke" (see original Vol. 74, No. 18, p. 4595) 21 4192
- Garrett, W. D.** Surface active organic material in the marine atmosphere 24 4561
- Garstang, M.** An observation of an inertial flow at low latitude 12 2207
- Gast, P. W.** Chemical characteristics and origin of oceanic ridge volcanic rocks 8 1585
- Gast, Paul W.** Isotopic composition of lead from oceanic islands 11 2097
- Gastman, I. J.** Detection of conjugate photoelectrons at Millstone Hill 4 807
- Gat, J. R.** Evolution of the isotopic composition of atmospheric waters in the Mediterranean Sea area 15 3039
- Gates, W. Lawrence.** Effects of western coastal orientation on Rossby-wave reflection and the resulting large-scale oceanic circulation 21 4105
- Gathman, Stuart G.** Electrification processes over Lake Superior 6 1041
- Gathman, Stuart G.** Surf electrification 24 4525
- Gavasci, A. T.** Correction to paper by A. T. Gavasci and H. Helmstaedt, "Pyroxene-rich garnet-peridotite inclusion in an ultramafic breccia dike at Moses Rock, southeastern Utah (see original Vol. 74, No. 27, p. 6691-6695) 23 4481
- Gaziyeve, Ya. I.** Radioactive aerosol distribution in the middle and upper troposphere over the USSR in 1963-1968 18 3575
- Gedney, Larry** Seismic refraction profiles of the ash flow in the Valley of Ten Thousand Smokes, Katmai National Monument, Alaska 14 2619
- Geiss, J.** Apollo 11 and 12 solar wind composition experiments; fluxes of He and Ne isotopes 31 5972
- Gendrin, R.** Very-low-frequency and particle rocket experiment at Kerguelen islands; 1, Very-low-frequency measurements 31 6153
- Gendrin, R.** Very-low-frequency and particle rocket experiment at Kerguelen islands; 2, Particle measurements 31 6169
- George, J. A.** Artificial injection of electrons into the geomagnetic field by Teak and Orange, low-altitude bursts of 1958 25 4710
- George, Michael J.** The altitude dependence of the quiettime cosmic ray ionization over the polar regions at solar minimum 16 3154
- George, Michael J.** Observations of the cosmic ray knee with a polar orbiting ionization chamber 16 3159
- George, Michael J.** New data on the absolute cosmic ray ionization in the lower atmosphere 19 3693
- Georges, T. M.** Wave-induced fluctuations in ionospheric electron content; a model indicating some observational biases 31 6295
- Georges, T. M.** Radio-wave modification of the ionosphere; amplification of ionospheric heating and triggering of "spread F" by natural irregularities 31 6436
- Georgii, Hans Walter** On the relation between drop size and concentration of trace elements in rainwater 9 1727
- Georgii, Hans Walter.** Contribution to the atmospheric sulfur budget 12 2365

- Gerloff, Ulrich.** Orbital elements of micrometeorites derived from Pioneer 8 measurements 34 6932
- Gilbert, C. M.** Structure of Mono basin, California; reply (see original Vol. 74, No. 22, p. 5221-5239) 20 4081
- Gilbert, R. L. G.** The Bedford Institute wave recorder 27 5215
- Gill, Edmund D.** Age of australite fall 5 996
- Gill, Edmund D.** Correction to paper by Edmund D. Gill, "Age of australite fall" (see original Vol. 75, No. 5, p. 996-1002) 32 6729
- Ginneken, A. Van.** Production of manganese 54 and zinc 65 from copper in thick targets by 0.45-GeV, 1.0-GeV, and 3.0-GeV protons 26 5121
- Glass, N. W.** Local time behavior of the alignment and position of a stable auroral red arc 13 2579
- Glenn, S. W.** Low-energy gamma radiation in the atmosphere at midlatitudes; reply (see original Vol. 74, No. 24, p. 5792) 4 873
- Goebel, R.** Argon 37 and argon 39 in recently fallen meteorites and cosmic-ray variations 11 2115
- Goforth, Tom T.** A physical interpretation of seismic waves induced by sonic booms 26 5087
- Goldberg, Edward D.** Atmospheric dusts from the north Pacific; a short note on a long-range eolian transport 6 1137
- Goldberg, R. A.** Positive ion composition from a rocket-borne mass spectrometer 1 133
- Goles, Gordon G.** A re-examination of the stability of goethite on Mars 35 7491
- Gopalakrishnan, Smt. S.** Interhemispheric mixing of fallout debris in the monsoon regions 9 1753
- Gopalan, K.** Rubidium-strontium studies on enstatite chondrites; whole meteorite and mineral isochrons 17 3457
- Gordon, Arnold L.** Vertical momentum flux accomplished by Langmuir circulation 21 4177
- Gordon, Robert B.** Mechanical properties of iron meteorites and the structure of their parent planets 2 439
- Gossard, E. E.** Internal waves in the atmosphere from high-resolution radar measurements 18 3523
- Gossard, Earl E.** Dispersion bandwidth deduced from coherency of wave recordings from spatially separated sites 7 1324
- Gough, D. I.** Development of a polar magnetic substorm current system 31 6318
- Gough, D. I.** Did an ice cap break Gondwanaland? 23 4475
- Grader, R. J.** Soft particle flux above 130 km at midlatitude 34 7267
- Graff, Philippe.** Analytical study of oblique echoes at the upper hybrid resonance 34 7193
- Gray, D. A.** Measurement of fine-scale atmospheric structure using an optical propagation technique 6 1077
- Greaves, James R.** Comments on paper by W.D. Bonner, "Gridding scheme for APT satellite pictures" (see original Vol. 74, No. 18, p. 4581) 6 1140
- Grebowsky, J. M.** Model study of plasmopause motion 22 4329
- Green, I. M.** Pioneer 8 electric field measurements in the distant geomagnetic tail 16 3167
- Green, I. M.** OGO 5 observations of quasi-trapped electromagnetic waves in the solar wind 19 3735
- Green, I. M.** OGO 5 observations of electrostatic turbulence in bow shock magnetic structures 19 3751
- Greenhill, J. G.** The neutron flux at balloon altitudes during a solar proton event 25 4595
- Gregory, J. B.** Structure of partially reflecting regions in the lower ionosphere 31 6387
- Griffin, John J.** Atmospheric dusts from the north Pacific; a short note on a long-range eolian transport 6 1137
- Griffin, Villard S., Jr.** Relevancy of the Dewey-Bird hypothesis of cordilleran-type mountain belts and the Wegmann stockwork concept 35 7504
- Grillot, L. R.** Correlation of magnetotelluric, seismic, and temperature data from southwest Iceland 32 6582
- Grim, Paul J.** Heat flow in the Caribbean and Gulf of Mexico 29 5655
- Gross, S. H.** VLF duct associated with the lower-hybrid-resonance frequency in a multi-ion upper ionosphere 22 4235
- Grossi, Mario D.** Refractive corrections in high-accuracy radio interferometry 8 1619
- Guedalia, Daniel** A study of radon 220 emanation from soils 2 357

- Guernsey, Ralph L.** Potential distribution surrounding a photo-emitting plate in a dilute plasma 16 3193
- Gulliksen, Steinar.** Tritium content of rain in Trondheim 12 2247
- Gunther, P.** A secondary ejecta explanation of a lunar seismogram 35 7426
- Gurnett, Donald A.** Observations of 8-amu/unit charge ion cyclotron whistlers 7 1342
- Gustafson, P. F.** Instrumental analysis for trace elements present in Chicago area surface air 15 2939
- Haagensohn, P.** Observed distribution of radioactivity, ozone, and potential vorticity associated with tropopause folding 12 2353
- Hake, R. D., Jr.** Coincident F-region temperature determinations from incoherent backscatter and Doppler broadening of [O I] 6300 Å 25 4887
- Hake, R. D., Jr.** Radio-wave modification of the ionosphere; optical ( $\lambda$ 6300) detection of radio frequency heating of electrons in the F region 31 6421
- Hales, A. L.** P travel times for an oceanic path 35 7362
- Hall, L. A.** Solar radiation in the extreme ultraviolet and its variation with solar rotation 34 6959
- Hamano, Y.** Compressional-wave velocities of fayalite,  $\text{Fe}_2\text{SiO}_4$  spinel, and coesite 14 2741
- Hamilton, E. L.** Velocities of compressional and shear waves in marine sediments determined in situ from a research submersible 20 4039
- Hamilton, Edwin L.** Sound velocity and related properties of marine sediments, north Pacific 23 4423
- Hammond, Douglas E.** A carbonate chemistry profile at the 1969 Geosecs intercalibration station in the eastern Pacific Ocean 36 7648
- Hanel, R. A.** The infrared interferometer experiment on Nimbus 3 30 5831
- Hanson, W. B.** Plasma temperatures in the magnetosphere 4 769
- Hanson, W. B.** A comparison of the oxygen ion-ion neutralization and radiative recombination mechanisms for producing the ultraviolet nightglow 22 4343
- Hanson, W. B.** Plasma measurements with the retarding potential analyzer on Ogo 6 28 5483
- Hanson, W. B.** Meteoric ions above the  $\text{F}_2$  peak 28 5503
- Harbridge, W. B.** Dependence of very-low-frequency electric field antenna impedance on magnetospheric plasma density 13 2490
- Harker, K. J.** Parametric wave amplification and mixing in the ionosphere 28 5459
- Harkness, D. D.** Carbon-14 concentrations in the atmosphere and carbon dioxide exchange rates 15 3089
- Harnden, F. R., Jr.** Low-energy gamma radiation in the atmosphere at midlatitudes; reply (see original Vol. 74, No. 24, p. 5792) 4 873
- Harris, Arthur K.** An eclipse study of soft-x-ray distribution over the sun and of the relative contributions of x rays and UV to E-layer formation 34 6980
- Harris, D. L.** Strontium-90 fallout over Lake Michigan 6 1092
- Harris, F. Ian.** Measurement of point target speeds with incoherent non-tracking radar; insect speeds in atmospheric waves 36 7588
- Harris, J. W.** Thermal expansion of garnets included in diamond 29 5775
- Harris, K. K.** A study of the influence of magnetic activity on the location of the plasmapause as measured by OGO 5 1 50
- Harris, K. K.** Observations of the plasmapause from OGO 5 1 219
- Harris, K. K.** The morphology of the bulge region of the plasmasphere 19 3848
- Harris, K. K.** Spectrometer observations in the region near the bow shock on March 12, 1968 31 6024
- Harrison, A. W.** Behavior of hydroxyl emission during aurora 7 1330
- Harrison, C. G. A.** Detailed geophysical studies on the Hawaiian arch near 24° 25'N, 157° 40'W; a closely spaced suite of heat-flow stations 2 333
- Harrison, C. G. A.** Magnetization of Pacific seamounts; a preliminary polar curve for the northeastern Pacific 11 2035
- Hart, David N.** Confirmation of sofar-hydrophone detection of submarine eruptions 11 2144
- Hartle, R. E.** Nonthermal heating in the two-fluid solar wind model 34 6915
- Hartung, J. B.** Tenoumer crater, Mauritania; age and petrologic evidence for origin by meteorite impact 23 4396

- Haskell, G. P.** Penetration of low-energy solar protons to low geomagnetic latitudes 25 4605
- Haslett, J. C.** Accidental rocket observation of  $O_2(^1\Delta_g)$  in an aurora 22 4363
- Haslett, J. C.** Observations of  $O_2(^1\Delta_g)$  in the atmosphere and allowable values of the eddy diffusion coefficient 31 6398
- Haslett, J. C.** Radio-wave modification of the ionosphere; preliminary results from the 1.27-micron measurements in the Boulder ionospheric modification experiment 31 6425
- Hatherton, Trevor.** Upper mantle inhomogeneity beneath New Zealand; surface manifestations 2 269
- Hattori, D. M.** Instrumental analysis for trace elements present in Chicago area surface air 15 2939
- Haumacher, G.** The seasonal variation in the concentration of strontium 90 in rain and its dependence on latitude 15 3027
- Hawkins, Laric V.** Crustal structure of the Coral Sea 11 1953
- Hawson, C. L.** Transfer of nuclear debris from southern to northern troposphere during 1968 9 1760
- Haymes, R. C.** Low-energy gamma radiation in the atmosphere at midlatitudes; reply (see original Vol. 74, No. 24, p. 5792) 4 873
- Hays, J. F.** Composition and elastic constants of hortonolite dunite 20 4071
- Hays, P. B.** Comparison of radar and optical temperature measurements in the F region 25 4881
- Hays, P. B.** Comparison of calculated and observed features of a stable midlatitude red arc 22 4261
- Healy, T. V.** Ammonia and ammonium sulfate in the troposphere over the United Kingdom 12 2317
- Heidbreder, E.** Measurement of the distribution in energy and angle of high-energy albedo neutrons and determination of an upper limit for the solar neutron flux 31 6347
- Heidt, L. E.** Water vapor, molecular hydrogen, methane, and tritium concentrations near the stratopause 15 3049
- Heikkila, W. J.** Photoelectron escape flux observations at midlatitudes 25 4877
- Heimerl, J.**  $CO_2$  absorption coefficient 1655-1825 Å 28 5574
- Heirtzler, J. R.** Magnetic anomalies in the northeast Atlantic between the Canary and Cape Verde islands 35 7412
- Helliwell, R. A.** Low-frequency noise observed in the distant magnetosphere withOGO 1 10 1854
- Helmstaedt, H.** Correction to paper by A. T. Gavasci and H. Helmstaedt, "Pyroxene-rich garnet-peridotite inclusion in an ultramafic breccia dike at Moses Rock, southeastern Utah (see original Vol. 74, No. 27, p. 6691-6695) 23 4481
- Helsley, C. E.** P travel times for an oceanic path 35 7362
- Henderson, Donald.** Large-scale dispersion of clusters of particles in various flow patterns 15 3104
- Henrikson, Paul** A statistical analysis of errors in gravimetrically computed vertical deflections 20 4017
- Hermance, J. F.** Magnetotelluric fields of a line current 17 3351
- Hermance, J. F.** Correlation of magnetotelluric, seismic, and temperature data from southwest Iceland 32 6582
- Hesstvedt, Eigil.** A theoretical study of the diurnal variation of hydroxyl emission 12 2337
- Heuring, F. T.** Characteristics of transverse magnetic disturbances observed at 1100 kilometers in the auroral oval 25 4757
- Hickerson, J. L.** Artificial injection of electrons into the geomagnetic field by Teak and Orange, low-altitude bursts of 1958 25 4710
- Hicks, G. T.** Observations of the aurora in the far ultraviolet from OGO 4 7 1290
- Hicks, G. T.** Equatorial aurora/airglow in the far ultraviolet 31 6233
- Hicks, J. E.** Response of winds in the 90- to 140-km altitude region to variations in solar activity 28 5565
- Hide, Raymond.** Comment on a paper by M. Nafi Toksöz, Jafar Arkani-Hamed, and Curtis A. Knight, "Geophysical data and long-wave heterogeneities on the Earth's mantle" (see original Vol. 74, No. 15, p. 3751-3770) 11 2141



- Higuchi, Y.** Plasma densities in the thermal magnetosphere determined by using hydromagnetic whistlers 34 7105
- Hill, R. W.** Soft particle flux above 130 km at midlatitude 34 7267
- Hill, T. W.** Location of neutral line in magnetotail 34 7323
- Hines, C. O.** Atmospheric gravity waves induced by a solar eclipse 4 875
- Hines, C. O.** Discussion of ionization effects on the propagation of acoustic-gravity waves in the ionosphere 13 2563
- Hines, C. O.** Eddy diffusion coefficients due to instabilities in internal gravity waves 19 3937
- Hines, C. O.** Comments on paper by E. E. Gossard, J. H. Richter, and D. Atlas, "Internal waves in the atmosphere from high resolution radar measurements" (see original Vol. 75, No. 18, p. 3523-3536) 30 5956
- Hinteregger, H. E.** Solar radiation in the extreme ultraviolet and its variation with solar rotation 34 6959
- Hirshberg, J.** Observation of a solar flare induced interplanetary shock and helium-enriched driver gas 1 1
- Hobbs, P. V.** Electrical charges on snow particles 24 4499
- Hoch, R. J.** Auroral activity near Banff, Alberta 10 1935
- Hoch, R. J.** Recent occurrences of stable auroral red arcs 13 2511
- Hodges, R. R., Jr.** Vertical transport of minor constituents in the lower thermosphere by nonlinear processes of gravity waves 25 4842
- Hohenberg, C. M.** Spallation yields of xenon from irradiation of Cs, Ce, Nd, Dy, and a rare earth mixture with 730-Mev protons 22 4205
- Holden, John C.** Reconstruction of Pangaea; breakup and dispersion of continents, Permian to present 26 4939
- Holeman, E.** Time variations of radiation belt protons 22 4322
- Holland, W. D.** Particle size distribution in clouds from nuclear airbursts 36 7559
- Hollinger, James P.** Passive microwave measurements of the sea surface 27 5209
- Hollweg, Joseph V.** Lunar conducting islands and formation of a lunar limb shock wave 7 1209
- Hollweg, Joseph V.** Collisionless solar wind; 1, Constant electron temperature 13 2403
- Hollweg, Joseph V.** New plasma instabilities in the solar wind 28 5297
- Hollweg, Joseph V.** Angular broadening of radio sources by solar wind turbulence 19 3715
- Holzer, Robert E.** OGO 3 observations of ELF noise in the magnetosphere; 2, The nature of the equatorial noise 4 755
- Holzer, T. E.** Solar wind ion composition 31 6354
- Hones, E. W.** Simultaneous observations of an energetic electron event in the magnetotail by the Vela 3A and Imp 3 satellites, 1 34 7294
- Hones, E. W., Jr.** Poleward expansion of the auroral oval and associated phenomena in the magnetotail during auroral substorms, 1 34 7060
- Hones, E. W., Jr.** Simultaneous observations of an energetic electron event in the magnetotail by the Vela 3A and Imp 3 satellites, 2 34 7296
- Hones, Edward W., Jr.** Electric field in the magnetosphere as deduced from asymmetries in the trapped particle flux 19 3923
- Hooke, W. H.** Discussion of ionization effects on the propagation of acoustic-gravity waves in the ionosphere 13 2563
- Hooke, W. H.** Wave-induced fluctuations in ionospheric electron content; a model indicating some observational biases 31 6295
- Hooke, William H.** The ionospheric response to internal gravity waves; 1, The F<sub>2</sub> region response 28 5535
- Hooke, William H.** Ionospheric response to internal gravity waves; 2, Lower F region response 34 7229
- Hooke, William H.** Ionospheric response to internal gravity waves; 3, Changes in the densities of the different ion species 34 7239
- Hoppel, William A.** Electrification processes over Lake Superior 6 1041
- Hoppel, William A.** Surf electrification 24 4525
- Horai, Ki-iti** An empirical relationship between thermal conductivity and Debye temperature for silicates 5 978
- Horai, Ki-iti** Relationship among terrestrial heat flow, thermal conductivity, and geothermal gradient 11 1985

- Horbert, M.** Tracing atmospheric eddy mass transfer by means of natural radioactivity 12 2291
- Hori, A. M.** Formation of hydraulic jumps in a rotating system 15 2813
- Horiibe, Yoshio.** Oxygen and hydrogen isotope ratios of monthly collected waters from Nasudake volcanic area, Japan 30 5941
- Horning, Jiann-Tsorning** Large-amplitude hydromagnetic waves in the inner magnetosheath 25 4666
- Horstman, H. M.** A small solar x-ray flare on August 17, 1966 7 1157
- Hörz, Friedrich.** Static and dynamic origin of kink bands in micas 5 965
- Hosler, C. R.** Vertical diffusivity from radon profiles; reply (see original Vol. 74, No. 28, p. 7018-7026) 15 2851
- Houtz, R.** Seismic data from sonobuoy stations in the northern and equatorial Pacific 26 5093
- Houtz, R.** Structure of the Ross sea shelf from profiler data 32 6592
- Houtz, Robert E.** Sediment distribution in the Coral Sea 11 1963
- Hoverter, R. T.** Artificial injection of electrons into the geomagnetic field by Teak and Orange, low-altitude bursts of 1958 25 4710
- Howe, Herbert C., Jr.** Pioneer 6 plasma measurements in the magnetosheath 13 2429
- Howell, B. F., Jr.** Coriolis force and the new global tectonics 14 2769
- Hruška, A.** Transverse structure of the Earth's magnetotail and fluctuations of the tail magnetic field 13 2449
- Hrušková, J.** Transverse structure of the Earth's magnetotail and fluctuations of the tail magnetic field 13 2449
- Huang, Chun-ming.** F-region irregularities that cause scintillations and spread-F echoes at low latitude 25 4833
- Huang, Norden E.** Discussion of paper by Ming-Shun Chang, "The mass transport in deep-water long-crested random gravity waves" (see original Vol. 74, No. 6, p. 1515-1536) 12 2211
- Hubbard, N. J.** Chemical characteristics and origin of oceanic ridge volcanic rocks 8 1585
- Huene, Roland von.** Comments on paper by R. L. Chase and E. T. Bunce, "Underthrusting of the eastern margin of the Antilles by the floor of the western north Atlantic Ocean, and origin of the Barbados ridge" (see original Vol. 74, No. 6, p. 1413-1420) 2 488
- Hughes, H. G.** Diurnal variations in the apparent attenuations of ELF atmospherics over two different propagation paths 15 2795
- Humble, J. E.** Directional cosmic-ray cutoffs and the loop-cone phenomenon at midlatitude sites 31 5961
- Hundhausen, A. J.** Helium in the solar wind 7 1178
- Hundhausen, A. J.** Observation of a solar flare induced interplanetary shock and helium-enriched driver gas 1 1
- Hundhausen, A. J.** Large-scale characteristics of flare-associated solar wind disturbances 25 4631
- Hundhausen, A. J.** Solar wind proton properties; Vela 3 observations from July 1965 to June 1967 25 4643
- Hundhausen, A. J.** Solar wind ions;  $^{56}\text{Fe}^{+8}$  to  $^{56}\text{Fe}^{+12}$ ,  $^{28}\text{Si}^{+7}$ ,  $^{28}\text{Si}^{+8}$ ,  $^{28}\text{Si}^{+9}$ , and  $^{16}\text{O}^{+6}$  31 6360
- Hunt, Graham R.** Infrared emissivity of lunar surface features; 2, Interpretation 14 2671
- Hunt, Graham R.** Emission spectra of particulate silicates under simulated lunar conditions 32 6539
- Hunten, D. M.** The efficiency of  $\text{CO}_2$  formation in the Mars and Venus atmospheres; reply (see Vol. 75, No. 25, p. 4898-4899) 25 4900
- Hunten, D. M.** Production and diffusion of nitric oxide 22 4307
- Hunten, D. M.** Production and escape of hydrogen on Mars 31 5989
- Hunten, D. M.** An estimate of the present-day deep-mantle degassing rate from data on the atmosphere of Venus 18 3558
- Hunten, Donald M.** Photochemistry of  $\text{CO}_2$  in the atmosphere of Mars 7 1188
- Huss, A.** Model investigation of the time-dependent distribution of radon 15 3020
- Hwang, Li-San.** Wave setup of nonperiodic wave train and its associated shelf oscillation 21 4121
- Hwang, Li-San** Tsunami generation 33 6802
- Hynds, R. J.** Penetration of low-energy solar protons to low geomagnetic latitudes 25 4605

- Ida, Y.** Compressional-wave velocities of fayalite,  $\text{Fe}_2\text{SiO}_4$  spinel, and coesite 14 2741
- Ida, Yoshiaki.** Thermodynamic problems related to growth of magma 20 4051
- Idso, Sherwood B.** Seasonal changes in the vertical distribution of dust in the lower troposphere 12 2179
- Ifedili, S. O.** Latitude and altitude dependence of the cosmic ray albedo neutron flux 22 4197
- Imhof, W. L.** High-resolution studies of electrons 25 kev to 2.7 Mev precipitating at high latitudes 4 776
- Inman, Douglas L.** Longshore sand transport on beaches 30 5914
- Intriligator, D. S.** Pioneer 8 electric field measurements in the distant geomagnetic tail 16 3167
- Intriligator, D. S.** Evidence for a geomagnetic wake at 500 Earth radii 28 5319
- Irving, E.** Test for polar wandering and some possible implications; reply (see original Vol. 74, No. 4, p. 1026-1036) 5 1027
- Israël, H.** Tracing atmospheric eddy mass transfer by means of natural radioactivity 12 2291
- Ito, Jun** Composition and elastic constants of hortonolite dunite 20 4071
- Itoh, Tomizo.** Simulation experiment on the tail of type 1 comets 10 1937
- Ivanov, V. N.** Use of statistical wind characteristics for theoretical and experimental estimation of passive particle diffusion 18 3605
- Izquierdo, Miguel A.** constant-altitude balloon experiment at 48 kilometers 18 3501
- Jacchia, Luigi G.** Solar wind dependence of the diurnal temperature variation in the thermosphere 22 4347
- Jackson, Everett D.** Petrology of the Apollo 11 ilmenite basalts 29 5793
- Jacob, Klaus H.** Three-dimensional seismic ray tracing in a laterally heterogeneous spherical earth 32 6675
- Jacobs, J. A.** Plasma densities in the thermal magnetosphere determined by using hydromagnetic whistlers 34 7105
- Jacoby, Wolfgang R.** Instability in the upper mantle and global plate movements 29 5671
- Jaggard, D. L.** Traveling correlation function of the heights of wind-blown water waves 24 4519
- Jaggi, R. K.** Redistribution of trapped 55-Mev protons by Starfish nuclear explosion 1 57
- Jakeways, R.** Cosmic ray electron intensity observations 34 7280
- James, D. B.** A secondary ejecta explanation of a lunar seismogram 35 7426
- James, Odette B.** Petrology of the Apollo 11 ilmenite basalts 29 5793
- James, Odette B.** Lunar glasses of impact origin; physical and chemical characteristics and geologic implications 35 7445
- Jaramillo, Eugene E.** Transient waves in a Voigt-medium 29 5767
- Jenkins, Alvin W., Jr.** A comparison of hydromagnetic wave propagation in magnetospheres of plane and cylindrical geometries 19 3817
- Jenkins, R. W.** Latitude and altitude dependence of the cosmic ray albedo neutron flux 22 4197
- Jenkins, Robert W.** A comparison of the cosmic-ray daily variation recorded by neutron monitors at different elevations 10 1802
- Jines, W. R.** Statistical estimation of systematic errors at intersections of lines of aeromagnetic survey data 8 1507
- Johannessen, O. M.** Wind stress and turbulence over ice in the Gulf of St. Lawrence 15 2803
- Johannessen, O. M.** Observations of ice drift from a manned drifting station in the Gulf of St. Lawrence 15 2863
- Johannessen, Ola M.** Note on some vertical profiles below ice floes in the Gulf of St. Lawrence and near the North Pole 15 2857
- Johnson, G. Leonard.** Magnetic and bathymetric data bearing on sea-floor spreading north of Iceland 5 903
- Johnson, L.** Airborne dust collections over the north Atlantic 9 1782
- Johnson, R. G.** Preliminary results of a low-energy particle survey at synchronous altitude 31 6092
- Johnson, Stephen H.** Refraction seismic investigations of the northern midcontinent gravity high 26 5056
- Jonassen, Niels** Airborne measurements of radon 222 daughter ions in the atmosphere 9 1745

<b>Jonassen, Niels.</b> Measurement of small-ion concentrations	24 4491
<b>Jones, E. J. W.</b> Influences of Norwegian Sea overflow water on sedimentation in the northern north Atlantic and Labrador Sea	9 1655
<b>Jones, R. A.</b> Absorption measurements of Earth's hydrogen atmosphere from solar hydrogen Lyman alpha rocket data	10 1849
<b>Jones, R. A.</b> Comparison of several models of the Earth's hydrogen geocorona with data obtained from a solar hydrogen Lyman-alpha rocket spectrograph	34 6966
<b>Jordan, Tom.</b> Application of isotropic finite strain theory to ultrasonic and seismological data	23 4478
<b>Joselyn, Jo Ann.</b> A real-time index of geomagnetic activity	14 2777
<b>Junge, C.</b> Carbon monoxide in the atmosphere	12 2217
<b>Junge, C.</b> Studies of atmospheric N <sub>2</sub> O	12 2230
<b>Justus, C. G.</b> Response of winds in the 90- to 140-km altitude region to variations in solar activity	28 5565
<b>Justus, C. G.</b> Distribution and structure of irregular winds near 100 kilometers	12 2171
<b>Kahler, R.</b> Discussion of letter by Kunitomo Sakurai, "Characteristics of the x-ray and H $\alpha$ emissions associated with solar proton flares" (see original Vol. 75, No. 1, p. 225-227)	28 5637
<b>Kalashnikova, I. V.</b> Problem of phase transitions in the upper mantle and its connection with the Earth's crustal structure	5 877
<b>Kanabrocki, E. L.</b> Instrumental analysis for trace elements present in Chicago area surface air	15 2939
<b>Kanamori, Hiroo.</b> The Alaska earthquake of 1964; radiation of long-period surface waves and source mechanism	26 5029
<b>Kanamori, Hiroo.</b> Synthesis of long-period surface waves and its application to earthquake source studies, Kurile islands earthquake of October 13, 1963	26 5011
<b>Kanasewich, E. R.</b> Analysis of combined gravity and magnetic fields in wave number domain	29 5702
<b>Kanasewich, E. R.</b> Seismic attenuation and the nature of reflecting horizons within the crust	32 6693
<b>Kane, R. P.</b> Diurnal anisotropy of cosmic ray intensity	22 4350
<b>Kangieser, Paul C.</b> Seasonal changes in the vertical distribution of dust in the lower troposphere	12 2179
<b>Kao, S. K.</b> Large-scale dispersion of clusters of particles in various flow patterns	15 3104
<b>Karas, Richard.</b> Energy spectra of precipitating electrons from observations of optical aurora, Bremsstrahlung x rays, and auroral absorption	22 4266
<b>Karcz, Iaakov.</b> Possible significance of transition flow patterns in interpretation of origin of some natural bed forms	15 2869
<b>Karig, Daniel E.</b> Ridges and basins of the Tonga-Kermadec island arc system	2 239
<b>Karlson, Erik T.</b> On the equilibrium of the magnetopause	13 2438
<b>Karol, I. L.</b> Numerical model of the global transport of radioactive tracers from the instantaneous sources in the lower stratosphere	18 3589
<b>Kato, S.</b> Possible hydromagnetic coupling between the perturbations of the neutral and ionized atmosphere	13 2540
<b>Katsuragi, Y.</b> A study on plutonium fallout	12 2329
<b>Kaufman, Aaron.</b> Near-surface and near-bottom radon results for the 1969 north Pacific Geosecs station	36 7679
<b>Kaufman, Aaron.</b> Radium 226 measurements from the 1969 north Pacific Geosecs station	36 7682
<b>Kaufman, John W.</b> Comparison of tower influence on wind velocity for NASA's 150-meter meteorological tower and a wind tunnel model of the tower	6 1117
<b>Kaufmann, Richard L.</b> Large-amplitude hydromagnetic waves in the inner magnetosheath	25 4666
<b>Kaushal, Sushil K.</b> Rubidium 87-strontium 87 age of carbonaceous chondrites	2 463
<b>Kawano, Minoru.</b> On the constitution of terrestrial gamma radiation	29 5825
<b>Kawashima, Nobuki.</b> Simulation experiment on the tail of type I comets	10 1937
<b>Kay, R.</b> Chemical characteristics and origin of oceanic ridge volcanic rocks	8 1585
<b>Kaylor, Robert.</b> Numerical studies of penetrative convective instabilities	3 521



- Keeney, Joe.** Observations on the microwave emission from colliding charged water drops 6 1123
- Keir, D. L.** Velocities of compressional and shear waves in marine sediments determined in situ from a research submersible 20 4039
- Kelleher, John A.** Space-time seismicity of the Alaska-Aleutian seismic zone 29 5745
- Kelly, Kenneth K.** Mariner 5 measurement of the Earth's Lyman alpha emission 19 3769
- Keneshea, T. J.** Diurnal model of the E region 4 845
- Kennedy, G. C.** The effect of pressure on the melting temperature of solids 5 1019
- Kennel, C. F.** Auroral micropulsation instability 10 1863
- Kennel, C. F.** Electron precipitation pulsations 7 1279
- Kennel, C. F.** OGO 5 observations of electrostatic turbulence in bow shock magnetic structures 19 3751
- Kennel, C. F.** VLF electric field observations in the magnetosphere 31 6136
- Kenyon, Kern E.** Stokes transport 6 1133
- Keys, J. E.** Observations of ice drift from a manned drifting station in the Gulf of St. Lawrence 15 2863
- Khare, Bishun N.** Goethite on Mars; a laboratory study of physically and chemically bound water in ferric oxides 35 7480
- Kieffer, Hugh.** Spectral reflectance of  $\text{CO}_2\text{-H}_2\text{O}$  frosts 3 501
- Kieffer, Hugh.** Interpretation of the Martian polar cap spectra 3 510
- Kienle, Jürgen.** Gravity traverses in the Valley of Ten Thousand Smokes, Katmai National Monument, Alaska 32 6641
- Kigoshi, Kunihiro** Daily variations in the tritium concentration of atmospheric moisture 15 2981
- Kimball, B. A.** Spectra of air pressure fluctuations at the soil surface 33 6771
- Kinney, Patrick** Chemical characteristics of water masses in the Amerasian basin of the Arctic Ocean 21 4097
- Kirichenko, L. V.** Radon exhalation from vast areas according to vertical distribution of its short-lived decay products 18 3639
- Kitano, Kiyomitsu.** A note on the thermal structure of the eastern Bering sea 6 1110
- Kitazawa, Kazuhiro.** Intensity of the geomagnetic field in Japan for the past 10,000 years 35 7403
- Kivelson, Margaret G.** Inward motion of the magnetopause before a substorm 34 7018
- Kline, D.** Electron and nuclear magnetic resonance of three chondritic meteorites 29 5681
- Kline, J. R.** Instrumental analysis for trace elements present in Chicago area surface air 15 2939
- Knopoff, L.** Inversion phase and group slowness dispersion 11 2135
- Knopoff, L.** A property of long-period Love waves 20 4084
- Knopoff, L.** The mechanism at the focus of deep earthquakes 26 4965
- Knopoff, L.** The compensated linear-vector dipole; a possible mechanism for deep earthquakes 26 4957
- Knudsen, William C.** Tropical ultraviolet nightglow from oxygen ion-ion neutralization 19 3862
- Koch, Karl Rudolf** A simple layer model of the geopotential from a combination of satellite and gravity data 8 1483
- Kogan, M. G.** Gravity measurements in the southeast Atlantic on R. V. Academician Kurchatov cruise 3, March 1968 to July 1968 11 2137
- Koide, M.** Noble gases in the atmosphere between 43 and 63 kilometers 33 6731
- Kolopus, J. L.** Electron and nuclear magnetic resonance of three chondritic meteorites 29 5681
- Komar, Paul D.** Longshore sand transport on beaches 30 5914
- König, P. J.** Latitude dependence of charged particle albedo estimated from balloon-borne Geiger telescopes 7 1172
- Konstantinov, J. E.** Mean residence time of radioactive aerosols in the upper layers of the atmosphere based on fallout of high-altitude tracers 18 3569
- Koons, H. C.** Dependence of very-low-frequency electric field antenna impedance on magnetospheric plasma density 13 2490
- Koons, H. C.** Dependence of ELF emissions on the location of the plasmapause 28 5559

- Kornblum, Joseph J.** Collection efficiency for inertial impaction and sounding rocket collection of meteoric dust 20 3976
- Korshover, J.** Quasi-biennial, annual, and semiannual zonal wind and temperature harmonic amplitudes and phases in the stratosphere and low mesosphere of the northern hemisphere 3 543
- Kosarev, E. L.** Ultrahigh frequency radiation from lightnings 36 7524
- Kovach, Robert L.** Mascons and lunar gravity 32 6558
- Krajewski, B.** Comparison of atmospheric transport model calculations with observations of radioactive debris 15 2901
- Krasnopevtsev, G. V.** Some peculiarities of fission product concentration distributions over oceans in the tropical zone and their connection with atmospheric processes 18 3675
- Krey, P. W.** Comparison of atmospheric transport model calculations with observations of radioactive debris 15 2901
- Krimigis, S. M.** Trapped energetic nuclei  $Z \geq 3$  in the Earth's outer radiation zone 22 4210
- Krimigis, S. M.** Proton fluxes at 300 kev associated with propagating interplanetary shock waves 31 5980
- Krimigis, Stamatios M.** Energetic carbon, nitrogen, and oxygen nuclei in the Earth's outer radiation zone 31 6085
- Kroopnick, P.** Carbon 13 measurements on dissolved inorganic carbon at the north Pacific (1969) Geosecs station 36 7668
- Ku, T. L.** Radium in the Indian-Antarctic Ocean south of Australia 27 5286
- Ku, Teh-Lung** Radium 226 measurements from the 1969 north Pacific Geosecs station 36 7682
- Kubo, Haruya** Simulation experiment on the tail of type 1 comets 10 1937
- Kulkarni, R. N.** Longitudinal variation of ozone in the lower middle latitudes of the southern hemisphere 21 4174
- Kumazawa, Mineo.** The elastic constant of polycrystalline rocks and nonelastic behavior inherent to them; reply (see original Vol. 74, No. 22, p. 5311-5320) 14 2790
- Kummler, Ralph H.** Singlet oxygen in polluted environments 15 3115
- Kunde, V. G.** The infrared interferometer experiment on Nimbus 3 30 5831
- Kurenbin, O. I.** Theory of tracer distribution near the ground 18 3657
- Kuroda, P. K.** Heavy noble gases in Leoville; the case for mass fractionated xenon in carbonaceous chondrites 29 5693
- Kurtz, R.** Statistical study of micropulsation polarizations 28 5444
- Kusakabe, Minoru** Oxygen and hydrogen isotope ratios of monthly collected waters from Nasudake volcanic area, Japan 30 5941
- Kuzenkov, A. F.** Radioactive aerosol distribution in the middle and upper troposphere over the USSR in 1963-1968 18 3575
- Laaspere, T.** Comparison of certain VLF noise phenomena with the lower hybrid resonance frequency calculated from simultaneous ion composition measurements 1 97
- LaChapelle, E. R.** A theory of snow slab failure 36 7619
- Lachenbruch, Arthur H.** Crustal temperature and heat production; implications of the linear heat-flow relation 17 3291
- Lackner, K.** Deformation of a magnetic dipole field by trapped particles 16 3180
- Laeter, J. R. de** Aluminum 26-magnesium 26 dating of feldspar in meteorites 2 448
- LaHue, Miles D.** Atmospheric nitrous oxide concentrations in the humid tropics 15 2922
- Laing, M. B.** Study of Doppler spectra of radar sea echo 3 551
- Laird, A. R.** A model calculation of the diurnal variation in minor neutral constituents in the mesosphere and lower thermosphere including transport effects 16 3221
- Lake, R. A.** Salt rejection by sea ice during growth 3 583
- Lakshmi, D. R.** Nighttime response of the topside ionosphere to magnetic storms 22 4335
- Lal, D.** Vertical structure of the troposphere as revealed by radioactive tracer studies 15 2974
- Lambert, D. G.** Theoretical and observed Rayleigh-wave spectra for explosions and earthquakes 35 7382
- Lambert, Gérard** Existence of periodicity in radon concentrations and in the large-scale circulation at lower altitudes between 40° and 70° south 12 2341
- Lambert, Gérard.** Geographic variations of the large-scale vertical exchange speed 15 2877

- Landisman, M.** Effects of observational errors on the resolution of surface waves at intermediate distances 17 3399
- Landt, Jeremy A.** Shape of a solar wind disturbance on July 9, 1966, inferred from radio signal delay to Pioneer 6 25 4623
- Lange, J.** Ion abundances in the solar wind 31 6350
- Langer, G.** Cirrus clouds as collectors of aerosol particles 15 2961
- Langleben, M. P.** Reflection of sound at the water-sea ice interface 27 5243
- Langseth, Marcus G., Jr.** Heat flow in the Caribbean and Gulf of Mexico 29 5655
- Lanzerotti, L. J.** Radial diffusion of outer-zone electrons; an empirical approach to third-invariant violation 28 5351
- Lanzerotti, L. J.** Penetration of solar protons into the magnetosphere and magnetotail 19 3729
- Lapointe, S. M.** Solar radio centers and interplanetary sector structures in connection with recurrent geomagnetic storms 34 6991
- Larner, Kenneth L.** Surface motion of a layered medium having an irregular interface due to incident plane SH waves 5 933
- Larson, E. E.** Low- and high-temperature oxidation of titanomagnetite in relation to irreversible changes in the magnetic properties of submarine basalts 5 1003
- Latham, Gary V.** An experimental study of thermally induced microfracturing and its relation to volcanic seismicity 23 4455
- Latham, J.** Loss of charge and mass from raindrops falling in intense electric fields 3 515
- Latham, J.** Reply to the comments of C. T. Phelps and of G. A. Dawson and C. N. Richards (see original Vol. 75, No. 3, p. 515-520) 24 4593
- Laurent, Jean Louis** A study of radon 220 emanation from soils 2 357
- Laval, G.** Particle acceleration by electrostatic waves propagating in an inhomogeneous plasma 16 3255
- Lavine, James P.** A recalculation of the magnetic coordinates for Explorer 4 10 1940
- Le Méhauté, Bernard** Breaking waves on gentle slopes 9 1681
- Le Pichon, Xavier.** Correction to paper by Xavier Le Pichon, "Sea-floor spreading and continental drift" (see original Vol. 73, No. 12, p. 3661-3697) 14 2793
- Leake, Bernard E.** Some paradoxes in Australasian microtektite compositional trends 2 349
- Lee, J. C.** Stability analysis of whistler amplification 1 85
- Leinbach, H.** Conjugate observations of an electron precipitation event associated with the sudden commencement of a magnetic storm 34 7099
- Leipper, Dale F.** A sequence of current patterns in the Gulf of Mexico 3 637
- Leipunskiy, O. I.** Mean residence time of radioactive aerosols in the upper layers of the atmosphere based on fallout of high-altitude tracers 18 3569
- LeLievier, R. E.** Radio-wave modification of the ionosphere; heating the F region by deviative absorption of radio waves 31 6406
- LeLievier, R. E.** Radio-wave modification of the ionosphere; artificial heating of the ionosphere; early time phenomena 31 6419
- Lemon, E. R.** Spectra of air pressure fluctuations at the soil surface 33 6771
- Lethbridge, Mae DeVoe.** Relationship between thunderstorm frequency and lunar phase and declination 27 5149
- Lettau, H.** Discussion of the paper by C. R. Hosler, "Vertical diffusivity from radon profiles" (see original Vol. 74, No. 28, p. 7018-7026) 15 2849
- Leventhal, J. S.** Tritium fallout in the Pacific United States 36 7628
- Lewis, Brian T. R.** Experimental isostasy; 1, Theory of the determination of the Earth's isostatic response to a concentrated load 17 3357
- Lewis, Brian T. R.** Correction to paper by Brian T. R. Lewis and LeRoy M. Dorman "An isostatic model for the U.S.A. derived from gravity and topographic data" (see original Vol. 75, No. 17, p. 3367-3386) 23 4482
- Lewis, Brian T. R.** Experimental isostasy; 2, An isostatic model for the U.S.A. derived from gravity and topographic data 17 3367
- Lewis, D.** Photoelastic analysis of Rayleigh wave propagation in wedges 17 338
- Lewis, E. L.** Salt rejection by sea ice during growth 3 583
- Lewis, E. L.** The water structure under a growing sea ice sheet 33 6836
- Lezniak, J.** Rigidity dependence for Forbush decreases in 1968 compared with that for the 11-year variation 34 6885
- Lezniak, T. W.** Experimental study of magnetospheric motions and the acceleration of energetic electrons during substorms 34 7075



- Li, Y. H.** Radium in the Indian-Antarctic Ocean south of Australia 27 5286
- Li, Yuan-Hui.** Interchange of water between the major oceans 18 3545
- Li, Yuan-hui** A carbonate chemistry profile at the 1969 Geosecs intercalibration station in the eastern Pacific Ocean 36 7648
- Libby, W. F.** Tritium fallout in the Pacific United States 36 7628
- Lick, Wilbert.** The propagation of disturbances on glaciers 12 2189
- Liebermann, Robert C.** Velocity-density systematics for the olivine and spinel phases of  $Mg_2SiO_4$ - $Fe_2SiO_4$  20 4029
- Lin, Albert.** Breaking waves on gentle slopes 9 1681
- Lin, R. P.** Observations of scatter-free propagation of  $\sim 40$ -keV solar electrons in the interplanetary medium 13 2583
- Lincoln, J. Virginia.** IUWDS International Geophysical Calendar for 1970 7 1349
- Lincoln, J. Virginia.** IUWDS International Geophysical Calendar for 1970 1 235
- Lindzen, Richard S.** Mean heating of the thermosphere by tides 33 6868
- Linson, Lewis M.** Formation of striations in ionospheric plasma clouds 16 3211
- List, Robert J.** The slope of surfaces of maximum tracer concentration in the lower stratosphere 12 2279
- List, Roland** Laboratory investigations of temporary collisions of raindrops 36 7573
- Lister, C. R. B.** Heat flow west of the Juan de Fuca ridge 14 2648
- Liu, C. H.** Ducting of acoustic-gravity waves in the atmosphere with spatially periodic wind shears 7 1339
- Liu, Chuan Sheng.** Low-frequency drift instabilities of the ring current belt 19 3789
- Liu, Lin-gun.** Compression of ferromagnesian garnets and the effect of solid solutions on the bulk modulus 29 5757
- Llewellyn, E. J.** Radio-wave modification of the ionosphere; preliminary results from the 1.27-micron measurements in the Boulder ionospheric modification experiment 31 6425
- Lockwood, J. A.** Latitude and altitude dependence of the cosmic ray albedo neutron flux 22 4197
- Lockwood, J. A.** Altitude dependence of the barometric coefficient of cosmic ray neutron monitors 22 4354
- Lockwood, J. A.** Rigidity dependence for Forbush decreases in 1968 compared with that for the 11-year variation 34 6885
- Lockwood, John A.** A comparison of the cosmic-ray daily variation recorded by neutron monitors at different elevations 10 1802
- Lodge, James P., Jr.** Atmospheric nitrous oxide concentrations in the humid tropics 15 2922
- Lodge, James P., Jr.** Particles collected during a noctilucent cloud display 33 6853
- Loeb, Leonard B.** Mechanism of charge drainage from thunderstorm clouds 30 5882
- Logan, J. M.** Influence of residual elastic strain on the orientation of experimental fractures in three quartzose sandstones 2 387
- Logan, Lloyd M.** Infrared emissivity of lunar surface features; 2, Interpretation 14 2671
- Logan, Lloyd M.** Emission spectra of particulate silicates under simulated lunar conditions 32 6539
- London, Julius** Radiative cooling as a function of temperature and water vapor in the free atmosphere 33 6862
- Longuet-Higgins, M. S.** Longshore currents generated by obliquely incident sea waves, 1 33 6778
- Longuet-Higgins, M. S.** Longshore currents generated by obliquely incident sea waves, 2 33 6790
- Loosli, H. H.** Argon 37, argon 39, and krypton 81 in the atmosphere and tracer studies based on these isotopes 15 2895
- Lorius, C.** Tritium content in a firn core from Antarctica 12 2331
- Loucks, Ronald H.** Some features of chlorine and bromine in aerosols 12 2311
- Lövseth, Knut.** Prospective decrease in atmospheric radiocarbon 12 2271
- Low, F. J.** Low-resolution differential drift scans of the Moon at 22 microns 17 3319
- Lowes, F. J.** Comments on paper by L. R. Alldredge and C. O. Stearns, "Dipole model of the sources of the Earth's magnetic field and secular change" (see original Vol. 74, No. 27, p. 6583-6593) 32 6723



- Lowrie, W.** Comments on paper by P. N. Shive, "The effect of internal stress on the thermoremanence of nickel" (see original Vol. 74, No. 15, p. 3781-3788) 14 2781
- Lu, Lee.** Mascons and lunar gravity 32 6558
- Ludwig, William J.** Crustal structure of the Coral Sea 11 1953
- Ludwig, William J.** Sediment distribution in the Coral Sea 11 1963
- Lue, T.** Some drift observations by radio reflections from E, 1 183
- Luyanas, V. Yu.** Cosmogenic  $^{22}\text{Na}$ ,  $^7\text{Be}$ ,  $^{32}\text{P}$ , and  $^{33}\text{P}$  in atmospheric dynamics research 18 3665
- Luyendyk, Bruce P.** Reply, "Origin of short-wavelength magnetic lineations observed near the ocean bottom" (see original Vol. 74, No. 20, p. 4869-4881) 32 6721
- Lysne, P. C.** A comparison of calculated and measured low-stress Hugoniot and release adiabats of dry and water-saturated tuff 23 4375
- Macfarlane, D. J.** Crustal structure of the western Canary islands from seismic refraction and gravity data 26 4901
- Machta, L.** Strontium-90 fallout over Lake Michigan 6 1092
- Machta, Lester** The slope of surfaces of maximum tracer concentration in the lower stratosphere 12 2279
- Mack, Lawrence R.** Remarks on paper by J. H. Dieterich and E. T. Onat, "Slow finite deformations of viscous solids" (see original Vol. 74, No. 8, p. 2081-2088) 8 1625
- MacLennan, C. G.** Radial diffusion of outer-zone electrons; an empirical approach to third-invariant violation 28 5351
- MacNeil, C. F.** Laboratory investigations of temporary collisions of raindrops 36 7573
- Macy, William W.** Time variations of radiation belt protons 22 4322
- Madariaga, Raul.** Discussion of paper by M. Kumazawa, "The elastic constant of polycrystalline rocks and nonelastic behavior inherent to them" (see original Vol. 74, No. 22, p. 5311-5320) 14 2787
- Magnitsky, V. A.** Problem of phase transitions in the upper mantle and its connection with the Earth's crustal structure 5 877
- Mahlman, J. D.** Eddy transfer processes in the stratosphere during major and "minor" breakdowns of the polar night vortex 9 1701
- Maier, E. J.** Observations of the suprathreshold electron flux and the electron temperature at high latitudes 34 7168
- Maier, E. J. R.** Photoelectron flux and protonospheric heating during the conjugate point sunrise 4 816
- Maier, E. J. R.** Observations from Ogo 5 of the thermal ion density and temperature within the magnetosphere 31 6102
- Makhon'ko, E. P.** Content of trace elements in precipitation 18 3610
- Makhon'ko, K. P.** Model for capture of radioactivity by precipitation 18 3613
- Mal, A. K.** A property of long-period Love waves 20 4084
- Malahoff, Alexander.** Some possible mechanisms for gravity and thrust faults under oceanic trenches 11 1992
- Malakhov, S. G.** Radioactive aerosol distribution in the middle and upper troposphere over the USSR in 1963-1968 18 3575
- Malakhov, S. G.** Strontium 90 fallout distribution at middle latitudes of the northern and southern hemispheres and its relation to precipitation 18 3623
- Malakhov, S. G.** Microelement content of surface air above the continent and the ocean 18 3650
- Malakhov, S. G.** Some peculiarities of fission product concentration distributions over oceans in the tropical zone and their connection with atmospheric processes 18 3675
- Maldonado, G. V.** Artificial injection of electrons into the geomagnetic field by Teak and Orange, low-altitude bursts of 1958 25 4710
- Mange, P.** OGO 3 observations of the Lyman alpha intensity and the hydrogen concentration beyond  $5 R_E$  10 1837
- Mange, P.** High-altitude measurement of the Lyman alpha nightglow at solar minimum 22 4224
- Manghnani, Murli H.** Corrections to paper by Murli H. Manghnani, "Elastic constants of single-crystal rutile under pressures to 7.5 kilobars" (see original Vol. 74, No. 17, p. 4317-4328) 11 2151

- Mann, James E., Jr. Interaction of a thunderstorm with a conducting atmosphere (see original Vol. 74, No. 23, p. 5390-5396) 9 1697
- Manson, D. J. Artificial injection of electrons into the geomagnetic field by Teak and Orange, low-altitude bursts of 1958 25 4710
- Mantis, H. T. Comments on a paper by L. Aldaz, "Flux measurements of atmospheric ozone over land and water" (see original Vol. 74, No. 28, p. 6943-6946) 21 4187
- Manuel, O. K. Heavy noble gases in Leoville; the case for mass fractionated xenon in carbonaceous chondrites 29 5693
- Mao, Nai-hsien Composition and elastic constants of hortonolite dunite 20 4071
- Mao, Nai-hsien. Empirical equation of state for high compression 35 7508
- Maral, G. Motions associated with auroral zone electron precipitation 13 2601
- Marcus, Allan H. Comparison of equilibrium size distributions for lunar craters 26 4977
- Maree, J. P. Latitude dependence of charged particle albedo estimated from balloon-borne Geiger telescopes 7 1172
- Mariani, F. Magnetic-field fluctuations in the magnetosheath observed by Pioneers 7 and 8 31 6037
- Markl, R. G. Structure of the Blake-Bahama outer ridge 24 4539
- Marovich, E. Recent occurrences of stable auroral red arcs 25 4893
- Marsden, P. L. Cosmic ray electron intensity observations 34 7280
- Martell, E. A. Water vapor, molecular hydrogen, methane, and tritium concentrations near the stratopause 15 3049
- Martell, E. A. Noble gases in the atmosphere between 43 and 63 kilometers 33 6731
- Martina, E. Frank Proton energy distributions from 0.060 to 3.3 Mev at 6.6 Earth radii 28 5373
- Massé, R. Effects of observational errors on the resolution of surface waves at intermediate distances 17 3399
- Mathieu, G. G. Radium in the Indian-Antarctic Ocean south of Australia 27 5286
- Matsuo, Sadao Oxygen and hydrogen isotope ratios of monthly collected waters from Nasudake volcanic area, Japan 30 5941
- Matsushita, S. Possible hydromagnetic coupling between the perturbations of the neutral and ionized atmosphere 13 2540
- Matsushita, S. Effects of dynamo-region electric fields on the magnetosphere 28 5433
- Matteson, Charles Seismic refraction profiles of the ash flow in the Valley of Ten Thousand Smokes, Katmai National Monument, Alaska 14 2619
- Mattsson, Rolf. Seasonal variation of short-lived radon progeny,  $Pb^{210}$  and  $Po^{210}$ , in ground level air in Finland 9 1741
- Matveyev, A. A. Chemical hydrology of regions of east Antarctica 18 3686
- May, James P. Age of the Cape Kennedy barrier-and-lagoon complex 2 469
- Mayr, H. G. Significance of the ionosphere-protonosphere coupling for the interpretation of topside sounder profiles 13 2608
- McAfee, J. R. Topside plasma frequency resonance below the cyclotron frequency 22 4287
- McAfee, J. R. Electron temperature from topside plasma resonance observations 34 7272
- McCave, I. N. Deposition of fine-grained suspended sediment from tidal currents 21 4151
- McClure, J. P. Equatorial spread F; implications of VHF radar observations 34 7199
- McConnell, John C. Excitation processes for Martian dayglow 34 7290
- McConnell, R. K. Infrared spectra and radiative thermal conductivity of minerals at high temperatures 17 3443
- McDiarmid, I. B. Temporal behavior of energetic particle precipitation during an auroral substorm 1 123
- McDiarmid, I. B. Latitude profiles of low-energy solar electrons 19 3910
- McDonald, John A. A physical interpretation of seismic waves induced by sonic booms 26 5087
- McDonald, Keith L. Monthly means of the geomagnetic field 28 5631
- McElroy, M. B. The efficiency of  $CO_2$  formation in the Mars and Venus atmospheres; reply (see Vol. 75, No. 25, p. 4898-4899) 25 4900
- McElroy, M. B. Production and diffusion of nitric oxide 22 4307
- McElroy, M. B. Production and escape of hydrogen on Mars 31 5989
- McElroy, Michael B. Photochemistry of  $CO_2$  in the atmosphere of Mars 7 1188

- McElroy, Michael B.** Excitation processes for Martian dayglow 34 7290
- McGehee, J. H.** VLF electric field observations in the magnetosphere 31 6136
- McGetchin, T. R.** Titanoclinohumite; a possible mineralogical site for water in the upper mantle 2 255
- McGinnis, L. D.** Tectonics and the gravity field in the continental interior 2 317
- McKay, H. A. C.** Ammonia and ammonium sulfate in the troposphere over the United Kingdom 12 2317
- McKenzie, J. F.** Hydromagnetic oscillations of the geomagnetic tail and plasma sheet 28 5331
- McKibbin, D. D.** Pioneer 8 electric field measurements in the distant geomagnetic tail 16 3167
- McLain, D. Kenneth.** Radiation field and current of the lightning stepped leader 6 1058
- McLain, D. Kenneth.** Lightning return stroke current from magnetic and radiation field measurements 27 5143
- McLeish, William.** Spatial spectra of ocean surface temperature 33 6872
- McNeill, F. A.** VLF radio observations of magnetic impulses in the plasmasphere 22 4230
- McPherron, Robert L.** Growth phase of magnetospheric substorms 28 5592
- McPherron, Robert L.** Magnetic fluctuations during magnetospheric substorms; 1, Expansion phase 19 3927
- McPherson, D. A.** Dependence of very-low-frequency electric field antenna impedance on magnetospheric plasma density 13 2490
- McPherson, D. A.** Dependence of ELF emissions on the location of the plasmopause 28 5559
- McTaggart-Cowan, J. D.** Laboratory investigations of temporary collisions of raindrops 36 7573
- McWatters, K. D.** Comparison of radar and optical temperature measurements in the F region 25 4881
- Mead, Gilbert D.** International geomagnetic reference field 1965.0 in dipole coordinates 22 4372
- Medwin, H.** Traveling correlation function of the heights of wind-blown water waves 24 4519
- Medwin, Herman.** In situ acoustic measurements of bubble populations in coastal ocean waters 3 599
- Megill, L. R.** Oxygen atmospheric and infrared atmospheric bands in the aurora 25 4775
- Megill, L. R.** Accidental rocket observation of  $O_2(^1\Delta_g)$  in an aurora 22 4363
- Megill, L. R.** Observations of  $O_2(^1\Delta_g)$  in the atmosphere and allowable values of the eddy diffusion coefficient 31 6398
- Megill, L. R.** Radio-wave modification of the ionosphere; preliminary results from the 1.27-micron measurements in the Boulder ionospheric modification experiment 31 6425
- Mei, Chiang C.** Mass transport in water waves 36 7611
- Meier, R. R.**OGO 3 observations of the Lyman alpha intensity and the hydrogen concentration beyond  $5 R_E$  10 1837
- Meier, R. R.** High-altitude measurement of the Lyman alpha nightglow at solar minimum 22 4224
- Meier, R. R.** Absorption of the solar Lyman alpha line by geocoronal atomic hydrogen 34 6969
- Meier, R. R.** Depressions in the far-ultraviolet airglow over the poles 31 6218
- Meijer, R.** Structure of the Ross sea shelf from profiler data 32 6592
- Meister, J.** Apollo 11 and 12 solar wind composition experiments; fluxes of He and Ne isotopes 31 5972
- Meltz, G.** Radio-wave modification of the ionosphere; heating the F region by deviative absorption of radio waves 31 6406
- Mendell, W. W.** Low-resolution differential drift scans of the Moon at 22 microns 17 3319
- Meng, C. I.** A layer of energetic electrons ( $>40$  kev) near the magnetopause 10 1827
- Meng, C. I.** Variation of the magnetopause position with substorm activity 16 3252
- Meng, C. I.** Simultaneous observations of an energetic electron event in the magnetotail by the Vela 3A and Imp 3 satellites, 1 34 7294
- Meng, C. I.** Simultaneous observations of an energetic electron event in the magnetotail by the Vela 3A and Imp 3 satellites, 2 34 7296
- Mennella, R. A.** An airborne measurement of the salinity variations of the Mississippi River outflow 30 5909

- Merrill, Ronald T.** Low-temperature treatment of magnetite and magnetite-bearing rocks 17 3343
- Metzger, P. H.** On the diurnal variation of the exospheric neutral hydrogen temperature 28 5587
- Meyer, A.** Very-low-frequency and particle rocket experiment at Kerguelen islands; 1, Very-low-frequency measurements 31 6153
- Meyer, R. E.** Note on wave run-up 3 687
- Michel, F. C.** Discussion of the paper by K. W. Ogilvie and N. F. Ness, "Dependence of the lunar wake on solar wind plasma characteristics" (see original Vol. 74, No. 16, p. 4123-4128) 1 233
- Michel, F. C.** Diffusive entry of solar-flare particles into geomagnetic tail 31 6061
- Miers, Bruce T.** Measurements from a zero-pressure balloon in the stratopause (48 km) 18 3513
- Millard, H. T., Jr.** Chemical and mineralogical compositions of cosmic and terrestrial spherules from a marine sediment 11 2125
- Milledge, H. J.** Thermal expansion of garnets included in diamond 29 5775
- Miller, D. K.** Heavy noble gases in Leoville; the case for mass fractionated xenon in carbonaceous chondrites 29 5693
- Miller, L. W.** Local time behavior of the alignment and position of a stable auroral red arc 13 2579
- Miller, N. J.** The main electron trough during the rising solar cycle 34 7175
- Milsom, J. S.** Woodlark basin, a minor center of sea-floor spreading in Melanesia 35 7335
- Minato, Susumu** On the constitution of terrestrial gamma radiation 29 5825
- Miner, John W.** Thermal regime of a downgoing slab and new global tectonics 8 1397
- Minkin, Jean A.** Lunar glasses of impact origin; physical and chemical characteristics and geologic implications 35 7445
- Mishin, V. M.** A magnetosphere model based on two zones of precipitating energetic particles 4 797
- Misra, D.** Low-energy cosmic ray positrons and 0.51-Mev gamma rays from the galaxy 7 1141
- Mitrofanov, A. V.** Ultrahigh frequency radiation from lightnings 36 7524
- Miyake, Mikio** Airborne measurement of turbulent fluxes 24 4506
- Miyake, Y.** A study on plutonium fallout 12 2329
- Mizutani, H.** Compressional-wave velocities of fayalite,  $\text{Fe}_2\text{SiO}_4$  spinel, and coesite 14 2741
- Mohnen, V. A.** Preliminary results on the formation of negative small ions in the troposphere 9 1717
- Mohr, P. A.** The Afar triple junction and sea-floor spreading 35 7340
- Möller, U.** Mechanisms of transport from the atmosphere to the Earth's surface 15 3013
- Molnar, Peter.** Focal mechanisms along inclined earthquake zones in the Indonesia-Philippine region 8 1431
- Monfils, A.** Spatial separation of  $\lambda 3914$ - and  $\lambda 5577$ -A emissions in an aurora 13 2606
- Montbriand, L. E.** A simple method for calculating the local time of corrected geomagnetic midnight 28 5634
- Montes, H.** Long-period sound waves in the thermosphere from Apollo launches 28 5621
- Montgomery, M. D.** Large-scale characteristics of flare-associated solar wind disturbances 25 4631
- Montgomery, M. D.** Penetration of solar protons into the magnetosphere and magnetotail 19 3729
- Montgomery, Michael D.** Vela 4 plasma observations near the Earth's bow shock 7 1217
- Montgomery, Michael D.** Solar wind ions;  $^{56}\text{Fe}^{+8}$  to  $^{56}\text{Fe}^{+12}$ ,  $^{28}\text{Si}^{+7}$ ,  $^{28}\text{Si}^{+8}$ ,  $^{28}\text{Si}^{+9}$ , and  $^{16}\text{O}^{+6}$  31 6360
- Mooney, Harold M.** Upper mantle inhomogeneity beneath New Zealand; seismic evidence 2 285
- Mooney, Harold M.** Refraction seismic investigations of the northern midcontinent gravity high 26 5056
- Moore, C. E.** Instrumental analysis for trace elements present in Chicago area surface air 15 2939
- Moore, John C.** Decameter and meter wavelength radar studies of artificial plasma 1 171



- clouds in the lower ionosphere; 1, Thermodynamic properties of the atmosphere discerned from blast wave measurements
- Moore, Robert D.** Linearization and calibration of electrostatically feedback gravity meters 5 928
- Moore, Robert D.** Tidal to seismic frequency investigations with a quartz accelerometer of new geometry 8 1493
- Moos, H. W.** Far-ultraviolet altitude profiles and molecular oxygen densities in an aurora 4 788
- Moreno, G.** Solar wind and location of shock front and magnetopause at the 1969 solar maximum 34 6999
- Moretti, E. Horstman.** A small solar x-ray flare on August 17, 1966 7 1157
- Morrison, Foster.** A simple layer model of the geopotential from a combination of satellite and gravity data 8 1483
- Morrison, Foster.** Comments on paper by Milo Wolff, "Direct measurements of the Earth's gravitational potential using a satellite pair" (see original Vol. 74, No. 22, p. 5295-5300) 11 2142
- Morrison, J. A.** The heat capacity and thermal conductivity of Apollo 11 lunar rocks 10017 and 10046 at liquid helium temperatures 32 6553
- Morrison, Michael F.** Seismic slip rate versus sea-floor spreading rate on the eastern Pacific rise and Pacific Antarctic ridge 17 3285
- Morrison, Robert E.** Experimental studies on the optical properties of sea water 3 612
- Morrow, W.** Experimental evidence of the photochemical instability of a pure CO<sub>2</sub> planetary atmosphere 34 7311
- Morse, Fred A.** Variations in the solar ultraviolet flux from July 13 to August 9, 1968 25 4613
- Mosher, Joel A.** Lunar cratering and erosion from Orbiter 5 photographs 8 1445
- Mountjoy, J. C.** Dynamic spectral characteristics of chorus at a middle-latitude station 13 2503
- Mudie, J. D.** Detailed geophysical studies on the Hawaiian arch near 24° 25'N, 157° 40'W; a closely spaced suite of heat-flow stations 2 333
- Mulligan, J. C.** Measurement of the thermal conductivity of frost by a transient hot-wire technique 21 4180
- Munn, R. W.** Thermal expansion of garnets included in diamond 29 5775
- Münnich, Karl Otto** Tritium profile at the north Pacific (1969) Geosecs intercalibration station 36 7672
- Munroe, Robert J.** Heat flow from deep boreholes on two island arcs 23 4387
- Murcray, D. G.** Infrared emissivity of lunar surface features; 1, Balloon-borne observations 14 2662
- Murcray, F. H.** Infrared emissivity of lunar surface features; 1, Balloon-borne observations 14 2662
- Murray, Stephen P.** Settling velocities and vertical diffusion of particles in turbulent water 9 1647
- Murray, Stephen P.** Bottom currents near the coast during Hurricane Camille 24 4579
- Murri, William J.** Hugoniot and release-adiabat measurements for selected geologic materials 11 2063
- Myers, V.** Loss of charge and mass from raindrops falling in intense electric fields 3 515
- Myers, V.** Reply to the comments of C. T. Phelps and of G. A. Dawson and C. N. Richards (see original Vol. 75, No. 3, p. 515-520) 24 4593
- Myerson, Robert J.** Long-term evidence for the association of earthquakes with the excitation of the Chandler wobble 32 6612
- Naeser, C. W.** Fission track annealing and age determination of epidote minerals 8 1579
- Nagamoto, C. T.** Cirrus clouds as collectors of aerosol particles 15 2961
- Nagy, A. F.** Concerning the influence of elastic scattering upon photoelectron transport and escape 10 1902
- Nagy, A. F.** Comparison of radar and optical temperature measurements in the F region 25 4881
- Nagy, A. F.** Comparison of calculated and observed features of a stable midlatitude red arc 22 4261
- Nagy, A. F.** Photoelectron fluxes in the ionosphere 31 6260

- Nair, P. V. N.** Mechanisms of nucleus-forming reactions in the atmosphere 15 2951
- Nakano, G. H.** Redistribution of trapped 55-Mev protons by Starfish nuclear explosion 1 57
- Namias, Jerome.** Macroscale variations in sea-surface temperatures in the north Pacific 3 565
- Namias, Jerome** Temporal coherence in north Pacific sea-surface temperature patterns 30 5952
- Nance, Richard.** Positions of lunar features from Apollo 8 11 2029
- Narcisi, R. S.** Diurnal model of the E region 4 845
- Nash, Raymond A., Jr.** A statistical analysis of errors in gravimetrically computed vertical deflections 20 4017
- Nathans, M. W.** Particle size distribution in clouds from nuclear airbursts 36 7559
- Nation, J. B.** P travel times for an oceanic path 35 7362
- Nazarov, L. E.** Radioactive aerosol distribution in the middle and upper troposphere over the USSR in 1963-1968 18 3575
- Neave, K. G.** Icequakes on the Athabasca glacier 8 1351
- Nedveckaite, T. N.** New methods of measuring thoron (radon 220) exhalation 18 3635
- Nelson, D. M.** Instrumental analysis for trace elements present in Chicago area surface air 15 2939
- Nelson, G. J.** Coincident F-region temperature determinations from incoherent backscatter and Doppler broadening of [O I] 6300 Å 25 4887
- Nelson, K. W.** A description of the seasonal thermocline cycle in shallow coastal water 6 1127
- Ness, N. F.** Magnetic-field fluctuations in the magnetosheath observed by Pioneers 7 and 8 31 6037
- Ness, N. F.** Dependence of the lunar wake on solar wind plasma characteristics; reply (see original Vol. 74, No. 16, p. 4123-4128) 1 234
- Ness, N. F.** Configuration of the geomagnetic tail during substorms 34 7032
- Ness, N. F.** Observations and interpretation of the lunar Mach cone 31 6002
- Ness, Norman F.** Magnetic field fluctuations in the Earth's magnetosheath 31 6050
- Neugebauer, M.**OGO 5 observations of quasi-trapped electromagnetic waves in the solar wind 19 3735
- Neugebauer, M.** Direct correlations of large-amplitude waves with suprathermal protons in the upstream solar wind 34 7316
- Neugebauer, Marcia.** Initial deceleration of solar wind positive ions in the Earth's bow shock 4 717
- Newton, G. P.** In situ measurements of neutral and electron density wave structure from the Explorer 32 satellite 16 3200
- Newton, George P.** Latitudinal dependence of the diurnal density variation 28 5510
- Ney, E. P.** F-region airglow observations from Oso 5 28 5475
- Nguyen Ba Cuong** Geographic variations of the large-scale vertical exchange speed 15 2877
- Niskin, S.** Radiocarbon profile in the north Pacific 1969 Geosecs intercalibration station 36 7667
- Nobles, R. A.** Threshold rigidity change during the magnetic storm of March 23-24, 1969 28 5553
- Norris, Roger A.** Confirmation of sof-ar-hydrophone detection of submarine eruptions 11 2144
- Northrop, John** Seismic slip rate versus sea-floor spreading rate on the eastern Pacific rise and Pacific Antarctic ridge 17 3285
- Northrop, T. G.** Stationary waves produced by the Earth's bow shock 31 6011
- Norton, P. R.** The heat capacity and thermal conductivity of Apollo 11 lunar rocks 10017 and 10046 at liquid helium temperatures 32 6553
- Norton, Richard B.** Theory of nitric oxide in the Earth's atmosphere 19 3903
- Noshkin, V. E.** Ocean fallout; the Crater Lake experiment 6 1084
- Noxon, J. F.** Auroral emission from  $O(^1\Delta_g)$  10 1879
- Noxon, J. F.** Photodissociation of  $CO_2$  on Mars 34 7307
- Nur, Amos.** Relationship among terrestrial heat flow, thermal conductivity, and geothermal gradient 11 1985
- Nydal, Reidar** Prospective decrease in atmospheric radiocarbon 12 2271

- O'Brien, K. Calculated cosmic ray ionization in the lower atmosphere 22 4357
- Oeschger, H. Argon 37, argon 39, and krypton 81 in the atmosphere and tracer studies based on these isotopes 15 2895
- Offermann, D. Lower thermosphere composition and density above Sardinia in October 1967 28 5528
- O'Gallagher, J. J. The heliocentric longitude intensity profile of 15-Mev protons from the February 5, 1965, solar flare 7 1163
- Ogilvie, K. W. Dependence of the lunar wake on solar wind plasma characteristics; reply (see original Vol. 74, No. 16, p. 4123-4128) 1 234
- O'Keefe, John A. Correction to paper by J. A. O'Keefe, "The microtektite data; implications for the hypothesis of the lunar origin of tektites (see original Vol. 74, No. 27, p. 6795-6804) 20 4087
- O'Keefe, John A. The origin of the Moon 32 6565
- O'Keefe, David J. Accurate pressure, volume, temperature relations for copper 11 1947
- Olbert, Stanislaw. Observation of slow shocks in interplanetary space 31 6394
- Oldenburg, D. W. Development of a polar magnetic substorm current system 31 6318
- O'Leary, Brian Optical properties of Apollo 11 Moon samples 32 6532
- Olsen, Wiley S. A laser profilometer 12 2185
- Olson, W. P. Comparison of the predicted and observed magnetic field at ATS 1 34 7117
- Olson, W. P. Contribution of nonionospheric currents to the quiet daily magnetic variations at the Earth's surface 34 7244
- Opal, C. B. Far-ultraviolet altitude profiles and molecular oxygen densities in an aurora 4 788
- Opdyke, Neil D. Upper Miocene to recent magnetic stratigraphy in deep-sea sediments 23 4465
- O'Reilly, W. Rotational hysteresis study of oxidized basalts 2 375
- Osipov, Y. S. Use of statistical wind characteristics for theoretical and experimental estimation of passive particle diffusion 18 3605
- Osmond, J. K. Age of the Cape Kennedy barrier-and-lagoon complex 2 469
- Ossakow, S. L. Redistribution of trapped 55-Mev protons by Starfish nuclear explosion 1 57
- Ossakow, S. L. Spectrometer observations in the region near the bow shock on March 12, 1968 31 6024
- Ostenso, N. A. Magnetic and gravity profiles across the Alpha cordillera and their relation to Arctic sea-floor spreading 26 4925
- Ostenso, Ned A. Magnetic and bathymetric data bearing on sea-floor spreading north of Iceland 5 903
- Östlund, H. Göte. Hurricane tritium III; evaporation of sea water in hurricane Faith 1966 12 2303
- Östlund, H. Göte. Deuterium in hurricane Faith 1966; preliminary results 12 2323
- Östlund, H. Göte. Radiocarbon profile in the north Pacific 1969 Geosecs intercalibration station 36 7667
- Östlund, H. Göte. Tritium profile at the north Pacific (1969) Geosecs intercalibration station 36 7672
- Overbeck, James W. High resolution search for solar gamma-ray lines 10 1811
- Oversby, Virginia M. Isotopic composition of lead from oceanic islands 11 2097
- Owens, H. D. Omnidirectional intensity contours of low-energy protons ( $0.5 \leq E \leq 50$  kev) in the Earth's outer radiation zone at the magnetic equator 7 1269
- Oxburgh, E. R. Lunar convection 32 6549
- Oya, Hiroshi. Sequence of diffuse plasma resonances observed on Alouette 2 ionograms 22 4279
- Ozima, Mituko Low- and high-temperature oxidation of titanomagnetite in relation to irreversible changes in the magnetic properties of submarine basalts 5 1003
- Packer, D. M. Intensity profiles of the 6300-A and 5577-A OI lines in the night airglow; reply (see original Vol. 73, No. 17, p. 5535-5547) 13 2616
- Packer, Irene Gulledge Intensity profiles of the 6300-A and 5577-A OI lines in the night airglow; reply (see original Vol. 73, No. 17, p. 5535-5547) 13 2616

- Paffrath, Dieter.** Investigation on correlations between fractionation effects and particle size distributions in fission product samples 15 2991
- Pak, Hasong** An optical and hydrographic study of a temperature inversion off Oregon during upwelling 3 629
- Pak, Hasong** Light scattering and suspended particles in the eastern equatorial Pacific Ocean 15 2837
- Pak, Hasong** The Columbia river as a source of marine light-scattering particles 24 4570
- Pakiser, L. C.** Structure of Mono basin, California (see original Vol. 74, No. 22, p. 5221-5239) 20 4077
- Pakiser, L. C.** Structure on Mono basin, California; reply 20 4083
- Palmiotto, F.** Solar wind and location of shock front and magnetopause at the 1969 solar maximum 34 6999
- Paluch, Ilga R.** Theoretical collision efficiencies of charged cloud droplets 9 1633
- Pannettier, R.** Original use of the radioactive tracer gas krypton 85 to study the meridian atmospheric flow 15 2985
- Panza, G. F.** Deep structure of the Mediterranean basin 26 4919
- Park, C. G.** Whistler observations of the interchange of ionization between the ionosphere and the protonosphere 22 4249
- Park, C. G.** Whistler evidence of large-scale electron-density irregularities in the plasmasphere 19 3825
- Park, P. Kilho.** The Columbia river as a source of marine light-scattering particles 24 4570
- Park, R. J.** Detection of geomagnetically aligned currents associated with an auroral arc 13 2595
- Parker, L. W.** Theory of spacecraft sheath structure, potential, and velocity effects on ion measurements by traps and mass spectrometers 25 4720
- Parkin, D. W.** Airborne dust collections over the north Atlantic 9 1782
- Parkinson, T. D.** An observation in situ of an auroral pulsation 7 1334
- Parks, George K.** The acceleration and precipitation of Van Allen outer zone energetic electrons 19 3802
- Parungo, F. P.** Cirrus clouds as collectors of aerosol particles 15 2961
- Paschmann, G.** Preliminary results of a low-energy particle survey at synchronous altitude 31 6092
- Pastine, D. John.** On the accuracy of the Wachtman-Anderson relation 35 7421
- Pate, John B.** Atmospheric nitrous oxide concentrations in the humid tropics 15 2922
- Patel, V. L.** Sudden impulses in the magnetosphere observed at synchronous orbit 34 7255
- Patterson, James H.** The alpha-scattering technique of chemical analysis 32 6514
- Paul, A. K.** Radio-wave modification of the ionosphere; some ionosonde observations of ionosphere modification by very high power, high frequency ground-based transmission 31 6429
- Paulikas, G. A.** Effects of sudden commencements on solar protons at the synchronous orbit 4 734
- Payne, B. R.** Tritium injection and concentration distribution in the atmosphere 12 2251
- Pearce, Jeffrey B.** Mariner 5 measurement of the Earth's Lyman alpha emission 19 3769
- Pearlman, Michael R.** Refractive corrections in high-accuracy radio interferometry 8 1619
- Pearson, John E.** Aircraft measurements of the vertical distribution of radon in the lower atmosphere 30 5890
- Peek, H. Milton.** Vacuum ultraviolet emission from auroras 31 6209
- Peirson, D. H.** Transfer of nuclear debris from southern to northern troposphere during 1968 9 1760
- Pellat, R.** Particle acceleration by electrostatic waves propagating in an inhomogeneous plasma 16 3255
- Peltier, W. R.** Magnetotelluric fields of a line current 17 3351
- Pena, Jorge** Freezing temperatures of water droplets in equilibrium with different gases; correction (see original Vol. 75, No. 15, p. 2831-2835) 27 5296
- Pena, Jorge** Freezing temperatures of water droplets in equilibrium with different gases 15 2831
- Perez, J. K.** Stationary waves produced by the Earth's bow shock 31 6011
- Perkins, R. W.** Cosmogenic radionuclide production rates in the atmosphere 12 2385
- Perkins, R. W.** Trace element concentrations in the troposphere and lower stratosphere 15 3055



- Perkins, R. W.** Application of short-lived cosmogenic radionuclides as tracers of in-cloud scavenging processes 15 3076
- Perla, R. I.** A theory of snow slab failure 36 7619
- Perreault, P.** Poleward expansion of the auroral oval and associated phenomena in the magnetotail during auroral substorms, 1 34 7060
- Peter, George.** Discussion of paper by B. P. Luyendyk, "Origin of short-wavelength magnetic lineations observed near the ocean bottom" (see original Vol. 74, No. 20, p. 4869-4881) 32 6717
- Peters, Wolfgang.** Investigation on correlations between fractionation effects and particle size distributions in fission product samples 15 2991
- Petersen, Carl F.** Hugoniot and release-adiabat measurements for selected geologic materials 11 2063
- Peterson, Vern L.** Discussion of rocket nightglow data of I. S. Gulledge, D. M. Packer, S. G. Tilford, and J. T. Vanderslice (see original Vol. 73, No. 17, p. 5535-5547) 13 2613
- Petersons, H. F.** On the smoothing and spherical harmonic analysis of the storm of September 25, 1958 13 2569
- Petrenchuk, O. P.** Chemical composition of precipitation in regions of the Soviet Union 18 3629
- Phelps, C. T.** Charging of droplets by impulse corona 24 4483
- Phelps, C. T.** Comments on paper by J. Latham and V. Myers, "Loss of charge and mass from raindrops falling in intense electric fields" (see original Vol. 75, No. 3, p. 515-520) 24 4587
- Philberth, K.** Outflow and accumulation of ice in Jarl-Joset station, Greenland 24 4567
- Phillips, D. R.** Airborne dust collections over the north Atlantic 9 1782
- Phillpot, H. R.** The surface temperature inversion over the Antarctic continent 21 4161
- Phinney, R. A.** A property of long-period Love waves 20 4084
- Pike, C. P.** Universal time control of the south polar F layer during the IGY 25 4871
- Pilant, W. L.** Inversion phase and group slowness dispersion 11 2135
- Pilbeam, A.** Ammonia and ammonium sulfate in the troposphere over the United Kingdom 12 2317
- Pinkau, K.** Measurement of the distribution in energy and angle of high-energy albedo neutrons and determination of an upper limit for the solar neutron flux 31 6347
- Pitman, Douglas** Goethite on Mars; a laboratory study of physically and chemically bound water in ferric oxides 35 7480
- Plate, Erich** A note on the celerity of wind waves on a water current 18 3537
- Polian, Georges** Existence of periodicity in radon concentrations and in the large-scale circulation at lower altitudes between 40° and 70° south 12 2341
- Pollack, James B.** A re-examination of the stability of goethite on Mars 35 7491
- Pollack, James B.** Goethite on Mars; a laboratory study of physically and chemically bound water in ferric oxides 35 7480
- Pollard, R. T.** Surface waves with rotation; an exact solution 30 5895
- Pollock, W.** Observed distribution of radioactivity, ozone, and potential vorticity associated with tropopause folding 12 2353
- Pomerantz, M. A.** The variation with a period of two solar cycles in the cosmic ray diurnal anisotropy for the nucleonic component 7 1150
- Porath, H.** Development of a polar magnetic substorm current system 31 6318
- Postpischl, D.** Deep structure of the Mediterranean basin 26 4919
- Potemra, T. A.** Precipitating energetic electrons as an ionization source in the midlatitude nighttime D region 34 7161
- Potter, Wentworth E.** Rocket measurements of auroral electric and magnetic fields 28 5415
- Pötzl, K.** Inorganic chemical analyses of nonpolluted aerosols sampled at 1800 meters altitude 12 2347
- Pounder, E. R.** Observations of ice drift from a manned drifting station in the Gulf of St. Lawrence 15 2863
- Prabhakara, C.** The infrared interferometer experiment on Nimbus 3 30 5831
- Prag, A. B.** Variations in the solar ultraviolet flux from July 13 to August 9, 1968 25 4613
- Prasad, S. S.** Ionic composition and temperature over Arecibo 2 10 1911
- Prescott, J. R.** Autumnal peak in  $^{109}\text{Cd}$  fallout in precipitation at Calgary, Canada 27 5271

- Press, Frank.** Regionalized Earth models 32 6575
- Price, R. K.** Detailed structure of the breaking wave 27 5276
- Prinz, D. K.** Absorption of the solar Lyman alpha line by geocoronal atomic hydrogen 34 6969
- Pudovkina, I. B.** Strontium 90 fallout distribution at middle latitudes of the northern and southern hemispheres and its relation to precipitation 18 3623
- Quenzel, H.** Determination of size distribution of atmospheric aerosol particles from spectral solar radiation measurements 15 2915
- Quervain, M. de.** Outflow and accumulation of ice in Jarl-Joset station, Greenland 24 4567
- Quessette, Jacques Alain.** On the measurement of molecular oxygen concentration by absorption spectroscopy 4 839
- Rama.** Using natural radon for delineating monsoon circulation 12 2227
- Rama.** Vertical structure of the troposphere as revealed by radioactive tracer studies 15 2974
- Ramaty, R.** Low-energy cosmic ray positrons and 0.51-Mev gamma rays from the galaxy 7 1141
- Rancitelli, L. A.** Trace element concentrations in the troposphere and lower stratosphere 15 3055
- Randall, B. A.** Trapped energetic nuclei  $Z \geq 3$  in the Earth's outer radiation zone 22 4210
- Randall, Bruce A.** Energetic carbon, nitrogen, and oxygen nuclei in the Earth's outer radiation zone 31 6085
- Randall, M. J.** Toroidal free oscillations by the method of factorization 8 1571
- Randall, M. J.** The mechanism at the focus of deep earthquakes 26 4965
- Randall, M. J.** The compensated linear-vector dipole; a possible mechanism for deep earthquakes 26 4957
- Randhawa, J. S.** Vertical distribution of ozone in the winter subpolar region 9 1693
- Rangarajan, C.** Interhemispheric mixing of fallout debris in the monsoon regions 9 1753
- Rankin, D.** Statistical study of micropulsation polarizations 28 5444
- Rankin, John G.** Paleotemperatures for the Gulf of Mexico 24 4557
- Rao, B. C. Narasinga** Photoelectron flux and protonospheric heating during the conjugate point sunrise 4 816
- Rao, B. C. Narasinga.** Observations of the suprathermal electron flux and the electron temperature at high latitudes 34 7168
- Rao, G.** Long-period sound waves in the thermosphere from Apollo launches 28 5621
- Rao, Manoranjan.** The dependence of dart leader velocity on the interstroke time interval in a lightning flash 30 5868
- Rao, U. R.** Semi-diurnal anisotropy of cosmic radiation in the energy range 1 to 200 Gev 13 2391
- Ravoire, J.** Tritium content in a firn core from Antarctica 12 2331
- Razdan, H.** Altitude dependence of the barometric coefficient of cosmic ray neutron monitors 22 4354
- Rea, David K.** Changes in structure and trend of fracture zones north of the Hawaiian ridge and relation to sea-floor spreading 8 1421
- Reagan, J. B.** High-resolution studies of electrons 25 kev to 2.7 Mev precipitating at high latitudes 4 776
- Reddy, B. M.** Nighttime response of the topside ionosphere to magnetic storms 22 4335
- Reddy, C. A.** Possible hydromagnetic coupling between the perturbations of the neutral and ionized atmosphere 13 2540
- Redkin, J. N.** Properties of atmospheric aerosol measured with a centrifugal spectrometer 18 3563
- Reed, Walter E.** Transport of water away from a buried heat source with special reference to hydrologic phenomena observed at Aardvark nuclear detonation 2 415
- Rees, M. H.** Latitude distribution of night airglow 25 4894
- Rees, M. H.** Auroral proton oval 25 4763
- Regener, Victor H.** [On the flux of atmospheric ozone near the ground]; reply (see originals Vol. 74, No. 28, p. 6935-6942; p. 6943-6946) 21 4188
- Regener, Victor H.** On the flux of atmospheric ozone near the ground; correction (see original Vol. 75, No. 21, p. 4188) 33 6884
- Reid, George C.** Production and loss of electrons in the quiet daytime D region of the ionosphere 13 2551

- Reiss, Nathan M. Double scattering computations for a bistatic laser radar operating in the normal (long pulse) mode 36 7581
- Reiter, R. Control of vertical transport of aerosols between 700 and 3000 meters by lapse rate and fine structure of temperature 15 3065
- Rense, W. A. Absorption measurements of Earth's hydrogen atmosphere from solar hydrogen Lyman alpha rocket data 10 1849
- Reppin, C. Measurement of the distribution in energy and angle of high-energy albedo neutrons and determination of an upper limit for the solar neutron flux 31 6347
- Rho, Chaeshik. Formation of a dense aerosol size distribution 15 2931
- Rice, Alan. A note on nonlinear effects in mantle convection 2 491
- Richards, C. N. Discussion of paper by J. Latham and V. Myers, "Loss of charge and mass from raindrops falling in intense electric fields" (see original Vol. 75, No. 3, p. 515-520) 24 4589
- Richards, M. L. Magnetization of Pacific seamounts; a preliminary polar curve for the northeastern Pacific 11 2035
- Richter, J. H. Internal waves in the atmosphere from high-resolution radar measurements 18 3523
- Richter, Juergen H. Measurement of point target speeds with incoherent non-tracking radar; insect speeds in atmospheric waves 36 7588
- Rinehart, John S. Geysering action in a drilled well, Crump, Lake county, Oregon 32 6714
- Ringwood, A. E. Petrogenesis of Apollo 11 basalts and implications for lunar origin 32 6453
- Robbins, D. E. Helium in the solar wind 7 1178
- Robert, J. Tritium content in a firn core from Antarctica 12 2331
- Robertson, D. E. Trace element calibrations and profiles at the Geosecs test station in the northeast Pacific Ocean 36 7688
- Robertson, M. M. Local time behavior of the alignment and position of a stable auroral red arc 13 2579
- Robertson, W. A. Test for polar wandering and some possible implications; reply (see original Vol. 74, No. 4, p. 1026-1036) 5 1027
- Roble, R. G. Comparison of calculated and observed features of a stable midlatitude red arc 22 4261
- Roden, Gunnar I. Aspects of the mid-Pacific transition zone 6 1097
- Rodriguez, Paul. Observations of 8-amu/unit charge ion cyclotron whistlers 7 1342
- Roedel, Walter. Cosmic-ray-produced sodium 24 and other nuclides in the lower atmosphere 15 3033
- Roederer, Juan G. Electric field in the magnetosphere as deduced from asymmetries in the trapped particle flux 19 3923
- Roether, Wolfgang. Tritium profile at the north Pacific (1969) Geosecs intercalibration station 36 7672
- Rogister, A. Type II irregularities in the equatorial electrojet 19 3879
- Romero, John M. Charge versus drop size in an electrified cloud 30 5873
- Rona, Peter A. Magnetic anomalies in the northeast Atlantic between the Canary and Cape Verde islands 35 7412
- Rorden, L. Low-frequency noise observed in the distant magnetosphere with OGO 1 10 1854
- Rosa, A. V. da Evidence for persistent longitudinal anomalies in the ionospheric electron content 34 7276
- Rosen, L. H. Evidence for the large-scale azimuthal drift of electron precipitation during magnetospheric substorms 28 5576
- Rosenberg, Ronald L. Twenty-seven day deviations of the interplanetary magnetic field and plasmas from the Parker spiral model 28 5310
- Rosinski, J. Cirrus clouds as collectors of aerosol particles 15 2961
- Rostoker, G. Development of a polar magnetic substorm current system 31 6318
- Rostoker, Gordon. A three-dimensional model current system for polar magnetic substorms 1 107
- Roth, E. Tritium content in a firn core from Antarctica 12 2331
- Rowe, M. W. Spallation yields of xenon from irradiation of Cs, Ce, Nd, Dy, and a rare earth mixture with 730-Mev protons 22 4205

- Rupert, G. B.** Comments on paper by R. F. Favreau, "Generation of strain waves in rock by an explosion in a spherical cavity" (see original Vol. 74, No. 17, p. 3367-3386) 26 5138
- Russell, C. T.** OGO 5 observations of electrostatic turbulence in bow shock magnetic structures 19 3751
- Russell, C. T.** Direct correlations of large-amplitude waves with suprathermal protons in the upstream solar wind 34 7316
- Russell, Christopher T.** OGO 3 observations of ELF noise in the magnetosphere; 2, The nature of the equatorial noise 4 755
- Russell, Christopher T.** The Alfvén velocity in the magnetosphere and its relationship to ELF emissions 28 5582
- Russell, Christopher T.** Inward motion of the magnetopause before a substorm 34 7018
- Ryan, J. A.** Dust devil wind velocities; mature state 3 531
- Ryan, J. A.** Atmospheric vorticity and dust devil rotation 27 5179
- Rycroft, Michael J.** Statistical analysis of movements of the ionospheric trough and the plasmopause 28 5600
- Sackett, William M.** Organic carbon in the Gulf of Mexico 12 2199
- Sackett, William M.** Paleotemperatures for the Gulf of Mexico 24 4557
- Sagan, Carl.** Goethite on Mars; a laboratory study of physically and chemically bound water in ferric oxides 35 7480
- Saifudinova, T. I.** A magnetosphere model based on two zones of precipitating energetic particles 4 797
- Sailors, David B.** Dispersion bandwidth deduced from coherency of wave recordings from spatially separated sites 7 1324
- Sakata, S.** Convection in a mantle with variable viscosity 5 921
- Sakurai, Kunitomo.** Characteristics of the x-ray and H $\alpha$  emissions associated with solar proton flares 1 225
- Sakurai, Kunitomo.** Discussion of letter by Kunitomo Sakurai, "Characteristics of the x-ray and H $\alpha$  emissions associated with solar proton flares"; reply (see original Vol. 75, No. 1, p. 225-227) 28 5642
- Salanave, L. E.** Comments on letter by W. W. Troutman, "Numerical calculation of the pressure pulse from a lightning stroke" (see original Vol. 74, No. 18, p. 4595) 21 4192
- Salisbury, John W.** Infrared emissivity of lunar surface features; 2, Interpretation 14 2671
- Samir, Uri.** A possible explanation of an order of magnitude discrepancy in electron-wake measurements 4 855
- Sammis, Charles** Application of isotropic finite strain theory to ultrasonic and seismological data 23 4478
- Sanatani, S.** Plasma temperatures in the magnetosphere 4 769
- Sanatani, S.** Plasma measurements with the retarding potential analyzer on Ogo 6 28 5483
- Sanatani, S.** Meteoric ions above the F<sub>2</sub> peak 28 5503
- Sandel, B. R.** Detection of geomagnetically aligned currents associated with an auroral arc 13 2595
- Sarabhai, V.** Short-period fluctuations of cosmic ray intensity at the geomagnetic equator and their solar and terrestrial relationship 10 1795
- Saraceno, P.** Solar wind and location of shock front and magnetopause at the 1969 solar maximum 34 6999
- Sarkar, S. K.** Asymmetry in the distribution of sources of solar microwave bursts on the solar disk 34 7250
- Sartor, J. Doyne.** Accretion rates of cloud drops, raindrops, and small hail in mature thunderstorms 36 7547
- Sasamori, Takashi.** Radiative cooling as a function of temperature and water vapor in the free atmosphere 33 6862
- Sass, J. H.** Heat flow from deep boreholes on two island arcs 23 4387
- Saunders, Peter M.** Corrections for airborne radiation thermometry 36 7596
- Sauzay, G.** Tritium injection and concentration distribution in the atmosphere 12 2251
- Savage, J. C.** Icequakes on the Athabasca glacier 8 1351



- Sayers, J. Discrepancy in electron temperatures deduced from Langmuir probes and from incoherent scatter radars 25 4883
- Scarabucci, R. R. Satellite observations of equatorial phenomena and defocusing of VLF electromagnetic waves 1 69
- Scarf, F. L. Pioneer 8 electric field measurements in the distant geomagnetic tail 16 3167
- Scarf, F. L. Evidence for a geomagnetic wake at 500 Earth radii 28 5319
- Scarf, F. L. OGO 5 observations of quasi-trapped electromagnetic waves in the solar wind 19 3735
- Scarf, F. L. OGO 5 observations of electrostatic turbulence in bow shock magnetic structures 19 3751
- Scarf, F. L. Direct correlations of large-amplitude waves with suprathermal protons in the upstream solar wind 34 7316
- Scarf, F. L. VLF electric field observations in the magnetosphere 31 6136
- Scargill, D. Ammonia and ammonium sulfate in the troposphere over the United Kingdom 12 2317
- Schaffner, S. Ogo 4 spectrometer measurements of the tropical ultraviolet airglow 22 4299
- Scheiber, Leroy C. Comparison of tektite population polygons of bulk specific gravity, true material specific gravity, and refractive index 35 7513
- Schell, I. I. Variability and persistence in the Benguela current and upwelling off southwest Africa 27 5225
- Schell, W. R. Tritium injection and concentration distribution in the atmosphere 12 2251
- Scherb, F. Ion abundances in the solar wind 31 6350
- Schild, M. A. Electron observations between the inner edge of the plasma sheet and the plasmasphere 28 5401
- Schiff, H. I. Accidental rocket observation of  $O_2(^1\Delta_g)$  in an aurora 22 4363
- Schiff, H. I. Observations of  $O_2(^1\Delta_g)$  in the atmosphere and allowable values of the eddy diffusion coefficient 31 6398
- Schiffman, Robert L. The stress components of a porous medium 20 4035
- Schmidt, R. J. Conjugate observations of an electron precipitation event associated with the sudden commencement of a magnetic storm 34 7099
- Schmidt, U. A new method for recording molecular hydrogen in atmospheric air 9 1713
- Schneider, E. D. North Atlantic magnetic smooth zones 20 3955
- Scholl, David W. Comments on paper by R. L. Chase and E. T. Bunce, "Underthrusting of the eastern margin of the Antilles by the floor of the western north Atlantic Ocean, and origin of the Barbados ridge" (see original Vol. 74, No. 6, p. 1413-1420) 2 488
- Scholz, C. H. Comments on paper by J. S. Savage and B. B. Mohanty, "Does creep cause fracture in brittle rocks?" 11 2148
- Scholz, C. H. Strain and creep in central California 23 4447
- Scholz, T. G. Water vapor, molecular hydrogen, methane, and tritium concentrations near the stratopause 15 3049
- Scholz, T. G. Noble gases in the atmosphere between 43 and 63 kilometers 33 6731
- Schönfelder, V. Measurement of the distribution in energy and angle of high-energy albedo neutrons and determination of an upper limit for the solar neutron flux 31 6347
- Schotland, R. M. Double scattering computations for a bistatic laser radar operating in the normal (long pulse) mode 36 7581
- Schuert, Edward A. Turbulent diffusion in the intermediate waters of the north Pacific Ocean 3 673
- Schulz, Michael. Adiabatic preservation of gyrophase coherence in the Earth's field 22 4339
- Schulz, Michael. Radial diffusion of outer-zone electrons; an empirical approach to third-invariant violation 28 5351
- Schulz, Michael. Compressible corotation of a model magnetosphere 31 6329
- Schumann, G. Mechanisms of transport from the atmosphere to the Earth's surface 15 3013
- Schuster, Burton G. Detection of tropospheric and stratospheric aerosol layers by optical radar (lidar) 15 3123
- Schütz, K. Studies of atmospheric  $N_2O$  12 2230
- Schwarz, H. P. Aluminum 26-magnesium 26 dating of feldspar in meteorites 2 448

- Schwarz, E. J.** Paleomagnetic field intensity during cooling of the Sudbury irruptive 1700 million years ago 32 6631
- Schwiesow, R. L.** A Raman scattering method for precise measurement of atmospheric oxygen balance 9 1629
- Schwiesow, Ronald L.** A Raman scattering method for precise measurement of atmospheric oxygen balance; reply (see original Vol. 75, No. 9, p. 1629-1632) 30 5961
- Sclater, J. G.** Detailed geophysical studies on the Hawaiian arch near 24° 25'N, 157° 40'W; a closely spaced suite of heat-flow stations 2 333
- Sclater, J. G.** Comments on paper by E. Irving and W. A. Robertson, "Test for polar wandering and some possible implications" (see original Vol. 74, No. 4, p. 1026-1036) 5 1023
- Sclater, J. G.** Magnetization of Pacific seamounts; a preliminary polar curve for the northeastern Pacific 11 2035
- Scotnikova, O. G.** Mean residence time of radioactive aerosols in the upper layers of the atmosphere based on fallout of high-altitude tracers 18 3569
- Sears, D. M.** Possible observations and mechanism of very long delayed radio echoes 34 7326
- Segal, M.** Model investigation of the time-dependent distribution of radon 15 3020
- Sehmel, G. A.** Particle deposition from turbulent air flow 9 1766
- Seiler, W.** A new method for recording molecular hydrogen in atmospheric air 9 1713
- Seiler, W.** Carbon monoxide in the atmosphere 12 2217
- Seitz, Harold.** Use of lead 210 as a tracer of transport processes in the stratosphere 15 2885
- Selezneva, E. S.** Chemical composition of precipitation in regions of the Soviet Union 18 3629
- Semar, Cary Lloyd.** Effect of interstellar neutral hydrogen on the termination of the solar wind 34 6892
- Seneta, E.** On the smoothing and spherical harmonic analysis of the storm of September 25, 1958 13 2569
- Senko, E. E.** New methods of measuring thoron (radon 220) exhalation 18 3635
- Senko, E. E.** Investigation of turbulent exchange and wash-out by measurement of natural radioactivity in surface air 18 3669
- Serbu, G. P.** Observations from Ogo 5 of the thermal ion density and temperature within the magnetosphere 31 6102
- Serson, H.** Observations of ice drift from a manned drifting station in the Gulf of St. Lawrence 15 2863
- Seward, F. D.** Soft particle flux above 130 km at midlatitude 34 7267
- Shane, K. C.** Aluminum 26-magnesium 26 dating of feldspar in meteorites 2 448
- Shankland, T. J.** Pressure shift of infrared absorption bands in minerals and the effect on radiative heat transport 2 409
- Shapiro, Irwin I.** Interpretation of radar and radio observations of Venus 17 3301
- Shapley, A. H.** IUWDS International Geophysical Calendar for 1970 7 1349
- Shapley, A. H.** IUWDS International Geophysical Calendar for 1970 1 235
- Sharp, G. W.** A study of the influence of magnetic activity on the location of the plasmopause as measured by OGO 5 1 50
- Sharp, G. W.** Observations of the plasmopause from OGO 5 1 219
- Sharp, G. W.** The morphology of the bulge region of the plasmasphere 19 3848
- Sharp, G. W.** Spectrometer observations in the region near the bow shock on March 12, 1968 31 6024
- Sharp, R. D.** Preliminary results of a low-energy particle survey at synchronous altitude 31 6092
- Sharp, W. E.** Latitude distribution of night airglow 25 4894
- Shaw, Glenn E.** A summary of lightning current measurements collected at Mount Lemmon, Arizona 12 2159
- Shea, M. A.** Secular variations in cosmic ray cutoff rigidities 19 3921
- Sheaffer, Yvonne.** Faint meteor ablation processes 2 495
- Shedlovsky, J.** Observed distribution of radioactivity, ozone, and potential vorticity associated with tropopause folding 12 2353
- Shedlovsky, Julian P.** Particles collected during a noctilucent cloud display 33 6853
- Shelley, E. G.** Preliminary results of a low-energy particle survey at synchronous altitude 31 6092

- Shen, S. F.** Anisotropic Brownian diffusion and precipitation scavenging of submicron particles 12 2267
- Sheppard, Duane L.** An eclipse study of soft-x-ray distribution over the sun and of the relative contributions of x rays and UV to E-layer formation 34 6980
- Shimazaki, Tatsuo** A model calculation of the diurnal variation in minor neutral constituents in the mesosphere and lower thermosphere including transport effects 16 3221
- Shive, Peter N.** The effect of internal stress on the thermoremanence of nickel; reply (see original Vol. 74, No. 15, p. 3781-3788) 14 2785
- Shopauskiene, D. A.** Cosmogenic  $^{22}\text{Na}$ ,  $^7\text{Be}$ ,  $^{32}\text{P}$ , and  $^{33}\text{P}$  in atmospheric dynamics research 18 3665
- Short, Nicholas M.** Tenoumer crater, Mauritania; age and petrologic evidence for origin by meteorite impact 23 4396
- Shuman, B. M.** Rocket measurement of the equatorial electrojet 19 3889
- Signer, P.** Apollo 11 and 12 solar wind composition experiments; fluxes of He and Ne isotopes 31 5972
- Sill, W. R.** Method for estimating the electrical conductivity of the lunar interior 1 201
- Silver, L. T.** Titanoclinohumite; a possible mineralogical site for water in the upper mantle 2 255
- Silverman, S. M.** On the thermal expansion and contraction of quartz 2 406
- Simmons, G.** Heat flow between the Caribbean sea and the Mid-Atlantic ridge 11 1973
- Simmons, Gene.** An empirical relationship between thermal conductivity and Debye temperature for silicates 5 978
- Simmons, Gene.** Lunar cratering and erosion from Orbiter 5 photographs 8 1445
- Simmons, Gene.** On the calculation of the seismic parameter  $\phi$  at high pressure and high temperatures 26 5113
- Simmons, Gene.** Dielectric properties of Apollo 11 lunar samples and their comparison with Earth materials 32 6524
- Simon, Albert.** Growth and stability of artificial ion clouds in the ionosphere 31 6287
- Simpson, H. J.** Ocean fallout; the Crater Lake experiment 6 1084
- Simpson, H. James.** Tritium in Crater Lake, Oregon 27 5195
- Simpson, W. R.** Large fluxes of 1-kev atomic hydrogen at 800 km 31 6390
- Singer, S.** Penetration of solar protons into the magnetosphere and magnetotail 19 3729
- Singer, Sidney.** Poleward expansion of the auroral oval and associated phenomena in the magnetotail during auroral substorms, 1 34 7060
- Singh, P.** Altitude dependence of the barometric coefficient of cosmic ray neutron monitors 22 4354
- Singh, P.** Rigidity dependence for Forbush decreases in 1968 compared with that for the 11-year variation 34 6885
- Singh, Sarva Jit.** Static deformation of a multilayered half-space by internal sources 17 3257
- Sipler, D. P.** Coincident F-region temperature determinations from incoherent backscatter and Doppler broadening of [O I] 6300 Å 25 4887
- Sipler, D. P.** Radio-wave modification of the ionosphere; optical ( $\lambda 6300$ ) detection of radio frequency heating of electrons in the F region 31 6421
- Siscoe, G. L.** Solar wind structure determined by corotating coronal inhomogeneities; 1, Velocity-driven perturbations 10 1817
- Siscoe, G. L.** Pioneer 8 electric field measurements in the distant geomagnetic tail 16 3167
- Siscoe, G. L.** Evidence for a geomagnetic wake at 500 Earth radii 28 5319
- Siscoe, G. L.** The virial theorem applied to magnetospheric dynamics 28 5340
- Slade, Martin A.** Interpretation of radar and radio observations of Venus 17 3301
- Sládkovič, R.** Control of vertical transport of aerosols between 700 and 3000 meters by lapse rate and fine structure of temperature 15 3065
- Sleep, Norman H.** Topography and tectonics at the intersections of fracture zones with central rifts 14 2748
- Slinn, W. G. N.** Anisotropic Brownian diffusion and precipitation scavenging of submicron particles 12 2267
- Smart, D. F.** Secular variations in cosmic ray cutoff rigidities 19 3921

- Smith, Alan R.** Radiogenic heat production in prebatholithic rocks of the central Sierra Nevada 2 431
- Smith, D. H.** Diurnal variation of the mean Faraday factor at Arecibo 4 823
- Smith, Edward J.** Magnetic measurements in the Earth's magnetosphere and magnetosheath; Mariner 5 7 1233
- Smith, Edward J.** OGO 3 observations of ELF noise in the magnetosphere; 2. The nature of the equatorial noise 4 755
- Smith, J. Dungan.** Stability of a sand bed subjected to a shear flow of low Froude number 30 5928
- Smith, L. L.** Auroral activity near Banff, Alberta 10 1935
- Smith, R. L.** Polarization of proton whistlers 34 7261
- Smith, Robert L.** An optical and hydrographic study of a temperature inversion off Oregon during upwelling 3 629
- Smith, S. D.** Wind stress and turbulence over ice in the Gulf of St. Lawrence 15 2803
- Smith, Stuart D.** Thrust-anemometer measurements of wind turbulence, Reynolds stress, and drag coefficient over the sea 33 6758
- Snouse, Thomas W.** Lunar luminescence and neutral particles 8 1573
- Soderblom, Laurence A.** A model for small-impact erosion applied to the lunar surface 14 2655
- Sowinski, Kenneth P.** The alpha-scattering technique of chemical analysis 32 6514
- Sparrow, J. G.** F-region airglow observations from Oso 5 28 5475
- Spencer, Derek W.** Trace element calibrations and profiles at the Geosecs test station in the northeast Pacific Ocean 36 7688
- Spetzler, Hartmut.** Equation of state of polycrystalline and single-crystal MgO to 8 kilobars and 800°K 11 2073
- Spiger, R. J.** Detection of geomagnetically aligned currents associated with an auroral arc 13 2595
- Spooner, C. M.** Strontium 87/strontium 86 initial ratios in pyroxene granulite terranes 32 6706
- Sprenkel-Segel, E. L.** Recoilless resonance spectroscopy of meteoritic iron oxides 32 6618
- Staley, D. O.** Man on an asteroid 28 5571
- Staley, D. O.** Equation of mass continuity for radon and its decay products (see original Vol. 75, No. 9, p. 1733-1740) 27 5293
- Starikov, B. G.** Investigation of turbulent exchange and wash-out by measurement of natural radioactivity in surface air 18 3669
- Stearns, C. O.** Reply, "Dipole model of the sources of the Earth's magnetic field and secular change" (see original Vol. 74, No. 27, p. 6583-6593) 32 6725
- Stecker, F. W.** Low-energy cosmic ray positrons and 0.51-Mev gamma rays from the galaxy 7 1141
- Stéfant, Robert J.** Nonpotential ion harmonic waves 34 7182
- Stehli, Francis G.** A test of the Earth's magnetic field during Permian time 17 3325
- Stevens, John R.** Proton energy distributions from 0.060 to 3.3 Mev at 6.6 Earth radii 28 5373
- Stevenson, Merritt.** Circulation in the Panama bight 3 659
- Stewart, A. I.** Photoionization coefficients and photoelectron impact excitation efficiencies in the daytime ionosphere 31 6333
- Stewart, Ronald.** On surface stress and Langmuir circulations (see original Vol. 75, No. 21, p. 4177-4179) 36 7635
- Stoddart, J. W.** F-region airglow observations from Oso 5 28 5475
- Stoering, J. P.** Soft particle flux above 130 km at midlatitude 34 7267
- Stoker, P. H.** Latitude dependence of charged particle albedo estimated from balloon-borne Geiger telescopes 7 1172
- Stolov, Harold L.** Kelvin-Helmholtz instability and the semiannual variation of geomagnetic activity 31 6073
- Storebó, Per B.** Formation of a dense aerosol size distribution 15 2931
- Strobel, D. F.** Production and diffusion of nitric oxide 22 4307
- Strohbehn, J. W.** The feasibility of laser experiments for measuring the permittivity spectrum of the turbulent atmosphere 6 1067



- Stuiver, Minze.** Oxygen and carbon isotope ratios of fresh-water carbonates as climatic indicators 27 5247
- Sturges, Wilton.** Observations of deep-water renewal in the Caribbean sea 36 7602
- Styra, B. I.** New methods of measuring thoron (radon 220) exhalation 18 3635
- Styra, B. I.** Cosmogenic  $^{22}\text{Na}$ ,  $^7\text{Be}$ ,  $^{32}\text{P}$ , and  $^{33}\text{P}$  in atmospheric dynamics research 18 3665
- Suess, H. E.** Transfer of carbon 14 and tritium from the atmosphere to the ocean 12 2363
- Suess, Steven T.** Some effects of gravitational tides on a model Earth's core 32 6650
- Sugimura, Y.** A study on plutonium fallout 12 2329
- Sukhera, B.** Very-low-frequency and particle rocket experiment at Kerguelen islands; 1, Very-low-frequency measurements 31 6153
- Sullivan, R. A. L.** Airborne dust collections over the north Atlantic 9 1782
- Sun, James M. S.** Energy counter-pressure scaling equations of linear crater dimensions 11 2003
- Sury, H. v.** Outflow and accumulation of ice in Jarl-Joset station, Greenland 24 4567
- Sutton, George H.** Elastic properties of the lunar surface from Surveyor spacecraft data 35 7439
- Sweeney, Ronald E.** Magnetic field mapping of the inner magnetosphere 22 4360
- Swider, W.** Sources for  $\text{H}_3\text{O}^+ \cdot (\text{H}_2\text{O})_n$  ions in the D region 34 7299
- Swider, W., Jr.** Diurnal model of the E region 4 845
- Swift, Daniel W.** Particle acceleration by electrostatic waves 31 6324
- Swinson, Derek B.** Cosmic ray density gradient perpendicular to the ecliptic plane 34 7303
- Sydoriak, S. J.** Solar wind proton properties; Vela 3 observations from July 1965 to June 1967 25 4643
- Sykes, Lynn R.** Seismicity of the Indian Ocean and a possible nascent island arc between Ceylon and Australia 26 5041
- Sykes, Lynn R.** Earthquake swarms and sea-floor spreading 32 6598
- Symons, D. T. A.** Paleomagnetic field intensity during cooling of the Sudbury irruptive 1700 million years ago 32 6631
- Takahashi, Taro** A carbonate chemistry profile at the 1969 Geosecs intercalibration station in the eastern Pacific Ocean 36 7648
- Takahashi, Taro** A proposed equation of state of stishovite 2 310
- Takahashi, Taro** Compression of ferromagnesian garnets and the effect of solid solutions on the bulk modulus 29 5757
- Takeuchi, H.** Convection in a mantle with variable viscosity 5 921
- Tanner, W. F.** Age of the Cape Kennedy barrier-and-lagoon complex 2 469
- Tarpley, J. D.** Effects of dynamo-region electric fields on the magnetosphere 28 5433
- Taupin, D.** Existence of periodicity in radon concentrations and in the large-scale circulation at lower altitudes between  $40^\circ$  and  $70^\circ$  south 12 2341
- Taylor, H. A.** Observations of irregular structure in thermal ion distributions in the duskside magnetosphere 13 2481
- Taylor, H. A., Jr.** Comparison of certain VLF noise phenomena with the lower hybrid resonance frequency calculated from simultaneous ion composition measurements 1 97
- Telegadas, K.** Strontium-90 fallout over Lake Michigan 6 1092
- Telegadas, Kosta** The slope of surfaces of maximum tracer concentration in the lower stratosphere 12 2279
- Tera, F.** Isotopic composition of gadolinium and neutron-capture effects in some meteorites 14 2753
- Theisen, J. F.** Diurnal variations in the apparent attenuations of ELF atmospherics over two different propagation paths 15 2795
- Thews, R.** Particle size distribution in clouds from nuclear airbursts 36 7559
- Thomas, C. W.** Cosmogenic radionuclide production rates in the atmosphere 12 2385
- Thomas, C. W.** Application of short-lived cosmogenic radionuclides as tracers of in-cloud scavenging processes 15 3076
- Thompson, Erik G.** Remarks on paper by J. H. Dieterich and E. T. Onat, "Slow finite deformations of viscous solids" (see original Vol. 74, No. 8, p. 2081-2088) 8 1625
- Thompson, T. L.** Electron temperature from topside plasma resonance observations 34 7272

- Thomson, J. Alex.** Radio-wave modification of the ionosphere; energy deposition in artificial ionospheric heating experiments 31 6446
- Thorne, R. M.** Turbulent loss of ring current protons 25 4699
- Thrane, E. V.** Correction to letter by E. V. Thrane, "Diurnal variation of electron production rates in the D region" (see original Vol. 74, No. 5, p. 1311-1315) 7 1348
- Thurston, R. N.** Extrapolation formula for finding the volume of solids at high pressures 8 1557
- Tilford, S. G.** Intensity profiles of the 6300-A and 5577-A OI lines in the night airglow; reply (see original Vol. 73, No. 17, p. 5535-5547) 13 2616
- Timothy, Adrienne F.** Long-term intensity variations in the solar helium II Lyman alpha line 34 6950
- Timothy, J. G.** Long-term intensity variations in the solar helium II Lyman alpha line 34 6950
- Tinsley, Brian A.** O I 4368-A emission following evening twilight 19 3932
- Toksöz, M. Nafi.** Thermal regime of a downgoing slab and new global tectonics 8 1397
- Tolstoy, I.** Long-period sound waves in the thermosphere from Apollo launches 28 5621
- Trawle, Michael.** A note on the celerity of wind waves on a water current 18 3537
- Troutman, W. W.** Numerical calculation of the pressure pulse from a lightning stroke; reply (see original Vol. 74, No. 18, p. 4595) 21 4196
- Troy, B. E., Jr.** OGO 4 observations of ion composition and temperatures in the topside ionosphere 19 3867
- Trufakin, V. A.** Investigation of turbulent exchange and wash-out by measurement of natural radioactivity in surface air 18 3669
- Tryggvason, Eysteinn.** Surface deformation and fault displacement associated with an earthquake swarm in Iceland 23 4407
- Tsai, Yi-Ben** Precise focal depth determination from amplitude spectra of surface waves 29 5729
- Turcotte, D. L.** Lunar convection 32 6549
- Turekian, K. K.** An estimate of the present-day deep-mantle degassing rate from data on the atmosphere of Venus 18 3558
- Turekian, K. K.** Trace element calibrations and profiles at the Geosecs test station in the northeast Pacific Ocean 36 7688
- Turekian, Karl K.** Results of the 1969 Geosecs test station 36 7639
- Turkevich, Anthony.** Production of manganese 54 and zinc 65 from copper in thick targets by 0.45-GeV, 1.0-GeV, and 3.0-GeV protons 26 5121
- Turkevich, Anthony L.** The alpha-scattering technique of chemical analysis 32 6514
- Turner, Robert E.** Response tests of cup, vane, and propeller wind sensors 27 5265
- Uman, M. A.** Comments on letter by W. W. Troutman, "Numerical calculation of the pressure pulse from a lightning stroke" (see original Vol. 74, No. 18, p. 4595) 21 4192
- Uman, Martin A.** Radiation field and current of the lightning stepped leader 6 1058
- Uman, Martin A.** Lightning return stroke current from magnetic and radiation field measurements 27 5143
- Ünlüata, Ümit** Mass transport in water waves 36 7611
- Urien, C. M.** Geological outline of the basins in southern Argentina and their continuation off the Atlantic shore 8 1363
- Utlaut, W. F.** Radio-wave modification of the ionosphere; an ionospheric modification experiment using very high power, high frequency transmission 31 6402
- Utlaut, W. F.** Radio-wave modification of the ionosphere; some ionosonde observations of ionosphere modification by very high power, high frequency ground-based transmission 31 6429
- Vaidya, S. N.** The effect of pressure on the melting temperature of solids 5 1019
- Valenzuela, G. R.** Study of Doppler spectra of radar sea echo 3 551
- Vallée, J. P.** Solar radio centers and interplanetary sector structures in connection with recurrent geomagnetic storms 34 6991
- Van Allen, J. A.** Trapped energetic nuclei  $Z \geq 3$  in the Earth's outer radiation zone 22 4210
- Van Allen, James A.** On the electric field in the Earth's distant magnetotail 1 29
- Van Allen, James A.** Energetic carbon, nitrogen, and oxygen nuclei in the Earth's outer radiation zone 31 6085

- van der Laan, Jan E. Ionospheric and magnetic observations during the annular solar eclipse of November 23, 1965 7 1312
- van der Walt, A. J. Latitude dependence of charged particle albedo estimated from balloon-borne Geiger telescopes 7 1172
- van der Weg, K. Statistical estimation of systematic errors at intersections of lines of aeromagnetic survey data 8 1507
- Vanderslice, J. T. Intensity profiles of the 6300-A and 5577-A  $\text{OI}$  lines in the night airglow; reply (see original Vol. 73, No. 17, p. 5535-5547) 13 2616
- Vasil'yev, A. S. Radioactive aerosol distribution in the middle and upper troposphere over the USSR in 1963-1968 18 3575
- Vasudevan, K. N. Mechanisms of nucleus-forming reactions in the atmosphere 15 2951
- Vasyliunas, V. M. Evidence for a geomagnetic wake at 500 Earth radii 28 5319
- Verzariu, P. Trapped energetic nuclei  $Z \geq 3$  in the Earth's outer radiation zone 22 4210
- Vette, James I. A recalculation of the magnetic coordinates for Explorer 4 10 1940
- Vigneron, J. Very-low-frequency and particle rocket experiment at Kerguelen islands; 1, Very-low-frequency measurements 31 6153
- Vincent, R. A. Structure of partially reflecting regions in the lower ionosphere 31 6387
- Vincent, Robert K. Infrared emissivity of lunar surface features; 2, Interpretation 14 2671
- Violette, E. J. Radio-wave modification of the ionosphere; some ionosonde observations of ionosphere modification by very high power, high frequency ground-based transmission 31 6429
- Vittori A., O. Earth accretion in "black spherules" 2 371
- Vogt, P. R. North Atlantic magnetic smooth zones 20 3955
- Vogt, P. R. Magnetic and gravity profiles across the Alpha cordillera and their relation to Arctic sea-floor spreading 26 4925
- Vogt, Peter R. Magnetic and bathymetric data bearing on sea-floor spreading north of Iceland 5 903
- Vohra, K. G. Interhemispheric mixing of fallout debris in the monsoon regions 9 1753
- Vohra, K. G. Mechanisms of nucleus-forming reactions in the atmosphere 15 2951
- Volchok, H. L. Ocean fallout; the Crater Lake experiment 6 1084
- Völk, H. J. New plasma instabilities in the solar wind 28 5297
- Volland, H. Phase delay between neutral temperature and neutral density at thermospheric heights 28 5618
- Volokitina, L. A. Radioactive aerosol distribution in the middle and upper troposphere over the USSR in 1963-1968 18 3575
- Volz, F. E. On dust in the tropical and midlatitude stratosphere from recent twilight measurements; correction (see original Vol. 75, No. 9, p. 1641-1646) 27 5296
- Volz, F. E. On dust in the tropical and midlatitude stratosphere from recent twilight measurements 9 1641
- Volz, Frederic E. Atmospheric turbidity after the Agung eruption of 1963 and size distribution of the volcanic aerosol 27 5185
- Volz, Gary. Refraction seismic investigations of the northern midcontinent gravity high 26 5056
- von Biel, H. A. Differential-phase partial-reflection technique for the determination of D-region ionization 25 4863
- Von Herzen, R. P. Heat flow between the Caribbean sea and the Mid-Atlantic ridge 11 1973
- Von Seggern, David Theoretical and observed Rayleigh-wave spectra for explosions and earthquakes 35 7382
- von Thüna, P. C. Infrared spectra and radiative thermal conductivity of minerals at high temperatures 17 3443
- von Zahn, U. Neutral air density and composition at 150 kilometers 28 5517
- von Zahn, U. Lower thermosphere composition and density above Sardinia in October 1967 28 5528
- Vondrak, R. R. Detection of geomagnetically aligned currents associated with an auroral arc 13 2595
- Vonnegut, B. Charging of droplets by impulse corona 24 4483
- Wada, Hiroaki Oxygen and hydrogen isotope ratios of monthly collected waters from Nasudake volcanic area, Japan 30 5941
- Wagner, Carl A. Geopotential coefficient recovery from very long arcs of resonant orbits 32 6662

- Walcott, R. I. Flexural rigidity, thickness, and viscosity of the lithosphere 20 3941
- Waldman, H. Evidence for persistent longitudinal anomalies in the ionospheric electron content 34 7276
- Waldteufel, P. Diurnal variations of the atomic oxygen density and temperature determined from incoherent scatter measurements in the ionospheric F region 25 4825
- Walker, E. R. The water structure under a growing sea ice sheet 33 6836
- Walker, G. O. A study of scintillations at low latitudes during a period from sunspot minimum to sunspot maximum 13 2517
- Walker, J. C. G. An estimate of the present-day deep-mantle degassing rate from data on the atmosphere of Venus 18 3558
- Wallace, L. Mariner 5 measurement of the Earth's Lyman alpha emission 19 3769
- Walton, A. Carbon-14 concentrations in the atmosphere and carbon dioxide exchange rates 15 3089
- Wand, R. H. Electron-to-ion temperature ratio from radar Thomson scatter observations 4 829
- Wang, Chi-yuen. Density and constitution of the mantle 17 3264
- Wang, Herbert. On the calculation of the seismic parameter  $\phi$  at high pressure and high temperatures 26 5113
- Warnock, J. M. Electron temperature from topside plasma resonance observations 34 7272
- Warren, Nicholas W. An experimental study of thermally induced microfracturing and its relation to volcanic seismicity 23 4455
- Warsh, K. L. An observation of an inertial flow at low latitude 12 2207
- Wartburg, A. Observed distribution of radioactivity, ozone, and potential vorticity associated with tropopause folding 12 2353
- Wasserburg, G. J. Isotopic composition of gadolinium and neutron-capture effects in some meteorites 14 2753
- Waterman, A. T., Jr. Measurement of fine-scale atmospheric structure using an optical propagation technique 6 1077
- Watson, Robert D. Surface-coating effects in remote sensing measurements 2 480
- Wax, R. L. Rocket-borne measurements of  $H\beta$  emissions and energetic hydrogen fluxes during an auroral breakup 4 783
- Wax, R. L. Impulsive precipitation events during an auroral breakup 19 3915
- Wax, R. L. Large fluxes of 1-keV atomic hydrogen at 800 km 31 6390
- Wayne, R. P. Photoionization cross section of  $O_2(^1\Delta_g)$  at wavelengths between 1035 and 1118 Å 3 699
- Weaver, J. T. Calculations of magnetic variations induced by internal ocean waves 33 6846
- Webber, W. R. Rigidity dependence for Forbush decreases in 1968 compared with that for the 11-year variation 34 6885
- Weber, A. H. Artificial injection of electrons into the geomagnetic field by Teak and Orange, low-altitude bursts of 1958 25 4710
- Weber, E. J. The effect of viscosity and anisotropy in the pressure on the azimuthal motion of the solar wind 13 2419
- Weber, Erich. Contribution to the residence time of sulfur dioxide in a polluted atmosphere 15 2909
- Weeks, R. A. Electron and nuclear magnetic resonance of three chondritic meteorites 29 5681
- Weichert, D. H. An analysis of the "Benham" aftershock sequence using Canadian recordings 8 1545
- Weidner, Donald. Discussion of paper by M. Kumazawa, "The elastic constant of polycrystalline rocks and nonelastic behavior inherent to them" (see original Vol. 74, No. 22, p. 5311-5320) 14 2787
- Weinstock, Jerome. Strong turbulence theory of ionospheric cross-field instability 34 7217
- Weiss, D. M. High-altitude measurement of the Lyman alpha nightglow at solar minimum 22 4224
- Weiss, R. F. The Geosecs 1969 intercalibration station; introduction, hydrographic features, and total  $CO_2$ - $O_2$  relationships 36 7641
- Weiss, R. F. A carbonate chemistry profile at the 1969 Geosecs intercalibration station in the eastern Pacific Ocean 36 7648



- West, Edward A.** Thermal conductivity of particulate basalt as a function of density in simulated lunar and Martian environments 20 4063
- Westphal, W. B.** Dielectric properties of Apollo 11 lunar samples and their comparison with Earth materials 32 6524
- Wetherill, G. W.** Rubidium-strontium studies on enstatite chondrites; whole meteorite and mineral isochrons 17 3457
- Wetherill, George W.** Rubidium 87-strontium 87 age of carbonaceous chondrites 2 463
- Weyl, Peter K.** On the annual temperature-salinity variation of the ocean surface 12 2209
- Whalen, B. A.** Temporal behavior of energetic particle precipitation during an auroral substorm 1 123
- Whalen, James A.** On the continuity of the auroral oval 34 7147
- Whang, Y. C.** Observations and interpretation of the lunar Mach cone 31 6002
- Whipple, E. C., Jr.** Theory of spacecraft sheath structure, potential, and velocity effects on ion measurements by traps and mass spectrometers 25 4720
- Whitacre, John.** A constant-altitude balloon experiment at 48 kilometers 18 3501
- Whitcomb, James H.** Reflection of P'P' seismic waves from discontinuities in the mantle 29 5713
- White, K. S.** The neutron flux at balloon altitudes during a solar proton event 25 4595
- White, R. Stephen.** Injection of protons into the radiation belt by solar neutron decay 7 1257
- White, R. Stephen.** Time variations of radiation belt protons 22 4322
- White, R. Stephen.** Proton energy distributions from 0.060 to 3.3 Mev at 6.6 Earth radii 28 5373
- Whitehead, J. D.** Ionospheric  $\text{Si}^+$  and  $\text{SiO}^+$  22 4366
- Whitehead, J. D.** Effect of windshear on the nighttime E region and an estimate of the rate of production of molecular ions 19 3919
- Whitehead, J. D.** Correction to letter by E. E. Ferguson, F. C. Fehsenfeld, and J. D. Whitehead, "Ionospheric  $\text{Si}^+$  and  $\text{SiO}^+$ " (see original Vol. 75, No. 22, p. 4366-4368) 34 7333
- Whitehead, J. D.** Radio-wave modification of the ionosphere; some F-region parameters measurable in the Boulder heating experiment 31 6417
- Whitehead, J. D.** Radio-wave modification of the ionosphere; radio-reflectivity detection of artificial modification of the ionospheric F layer 31 6439
- Whitney, J. A.** Velocities of compressional and shear waves in marine sediments determined in situ from a research submersible 20 4039
- Whitten, R. C.** The daytime upper ionosphere of Venus 19 3707
- Wiest, W.** Argon 37, argon 39, and krypton 81 in the atmosphere and tracer studies based on these isotopes 15 2895
- Wilcox, John M.** Statistical significance of the proposed heliographic latitude dependence of the dominant polarity of the interplanetary magnetic field 13 2587
- Wilcox, John M.** Interplanetary sector structure near the maximum of the sunspot cycle 31 6366
- Wiley, Robert E.** World contours of conjugate mirror locations 31 6342
- Wilkening, Marvin H.** Radon 222 concentrations in the convective patterns of a mountain environment 9 1733
- Wilkening, Marvin H.** Airborne measurements of radon 222 daughter ions in the atmosphere 9 1745
- Wilkening, Marvin H.** Equation of mass continuity for radon and its decay products; reply (see original Vol. 75, No. 9, p. 1733-1740) 27 5295
- Wilkins, Eugene M.** Hot-film anemometer measurements of velocity decay in Karman trail vortices 6 1033
- Willand, James H.** Comments on paper by W.D. Bonner, "Gridding scheme for APT satellite pictures" (see original Vol. 74, No. 18, p. 4581) 6 1140
- Williams, R. T.** Formation of hydraulic jumps in a rotating system 15 2813
- Williams, Robert H.** Strong turbulence theory of ionospheric cross-field instability 34 7217
- Williams, W. J.** Infrared emissivity of lunar surface features; 1. Balloon-borne observations 14 2662
- Willis, E.** Long-period sound waves in the thermosphere from Apollo launches 28 5621
- Willis, E.** Ocean fallout; the Crater Lake experiment 6 1084

- Wilson, Richard N.** A re-examination of the stability of goethite on Mars 35 7491
- Winchester, John W.** Some features of chlorine and bromine in aerosols 12 2311
- Winckler, J. R.** Evidence for the large-scale azimuthal drift of electron precipitation during magnetospheric substorms 28 5576
- Winckler, J. R.** Experimental study of magnetospheric motions and the acceleration of energetic electrons during substorms 34 7075
- Windisch, C.** Correlation of horizon A with Joides bore-hole results 29 5645
- Wise, Donald U.** Mascons as structural relief on a lunar "Moho" 2 261
- Wogman, N. A.** Cosmogenic radionuclide production rates in the atmosphere 12 2385
- Wolcott, J. H.** Local time behavior of the alignment and position of a stable auroral red arc 13 2579
- Wolf, R. A.** Effects of ionospheric conductivity on convective flow of plasma in the magnetosphere 25 4677
- Wolfe, Allan.** Large-amplitude hydromagnetic waves in the inner magnetosheath 25 4666
- Wolfe, J. H.** Pioneer 8 electric field measurements in the distant geomagnetic tail 16 3167
- Wolfe, J. H.** Evidence for a geomagnetic wake at 500 Earth radii 28 5319
- Wolfson, C. J.** Threshold rigidity change during the magnetic storm of March 23-24, 1969 28 5553
- Wolgemuth, K.** Barium analyses from the first Geosecs test cruise 36 7686
- Wollenberg, Harold A.** Radiogenic heat production in prebatholithic rocks of the central Sierra Nevada 2 431
- Womack, E. Allen** High resolution search for solar gamma-ray lines 10 1811
- Wong, C. S.** A carbonate chemistry profile at the 1969 Geosecs intercalibration station in the eastern Pacific Ocean 36 7648
- Wong, H. K.** Radium in the Indian-Antarctic Ocean south of Australia 27 5286
- Wood, John A.** Petrology of the lunar soil and geophysical implications 32 6497
- Woodman, R. F.** Equatorial spread F; implications of VHF radar observations 34 7199
- Woodman, Ronald F.** Vertical drift velocities and east-west electric fields at the magnetic equator 31 6249
- Workman, Joseph B.** Formation of striations in ionospheric plasma clouds 16 3211
- Wötzel, Dieter.** On the relation between drop size and concentration of trace elements in rainwater 9 1727
- Wright, John W.** Stokes drift and the fully developed sea 15 2847
- Wright, R. J.** Heavy noble gases in Leoville; the case for mass fractionated xenon in carbonaceous chondrites 29 5693
- Wu, Mao-Fou.** Evidence of vertical electromagnetic drift effect on the formation of F region equatorial anomaly 28 5612
- Wunsch, Carl** Preliminary results of internal wave measurements in the main thermocline at Bermuda 30 5899
- Wyss, Max.** Stress estimates for South American shallow and deep earthquakes 8 1529
- Yasyulyonis, R. Yu.** Cosmogenic  $^{22}\text{Na}$ ,  $^7\text{Be}$ ,  $^{32}\text{P}$ , and  $^{33}\text{P}$  in atmospheric dynamics research 18 3665
- Yates, Michael T.** Mascons as structural relief on a lunar "Moho" 2 261
- Yeh, Gour-Tsyh** Perturbation solution of an equation of atmospheric turbulent diffusion 27 5173
- Yeh, Tyan.** An explicit solution for polytropic solar wind equations 31 6309
- Yionoulis, S. M.** Algorithm to compute tropospheric refraction effects on range measurements 36 7636
- Yoneda, Kazuo.** Daily variations in the tritium concentration of atmospheric moisture 15 2981
- Young, J. A.** Cosmogenic radionuclide production rates in the atmosphere 12 2385
- Young, J. A.** Application of short-lived cosmogenic radionuclides as tracers of in-cloud scavenging processes 15 3076
- Young, R. A.** Experimental evidence of the photochemical instability of a pure  $\text{CO}_2$  planetary atmosphere 34 7311
- Yu, Wai-mao.** Excitation of plasma resonances by a small pulsed dipole in a weakly inhomogeneous plasma 10 1919
- Zambrano, J. J.** Geological outline of the basins in southern Argentina and their continuation off the Atlantic shore 8 1363

<b>Zatsepin, V. G.</b> Ultrahigh frequency radiation from lightnings	36 7524
<b>Zhigalovskaya, T. N.</b> Microelement content of surface air above the continent and the ocean	18 3650
<b>Zhulin, I. A.</b> A magnetosphere model based on two zones of precipitating energetic particles	4 797
<b>Zietz, Isidore</b> Magnetic anomalies from satellite magnetometer	20 4007
<b>Zillman, J. W.</b> The surface temperature inversion over the Antarctic continent	21 4161
<b>Zipf, E. C.</b> An observation in situ of an auroral pulsation	7 1334
<b>Zipf, E. C.</b> A mass spectrometer observation of NO in an auroral arc	31 6371
<b>Zmuda, A. J.</b> Some ionospheric properties at 1000 kilometers altitude within and near the auroral zone	10 1893
<b>Zmuda, A. J.</b> Characteristics of transverse magnetic disturbances observed at 1100 kilometers in the auroral oval	25 4757
<b>Zmuda, A. J.</b> Field-aligned current at 1100 km in the auroral region measured by satellite	34 7122
<b>Zmuda, A. J.</b> Precipitating energetic electrons as an ionization source in the midlatitude nighttime D region	34 7161
<b>Zrajevsky, I. M.</b> Theory of tracer distribution near the ground	18 3657
<b>Zuccaro, D.</b> Plasma measurements with the retarding potential analyzer on Ogo 6	28 5483







